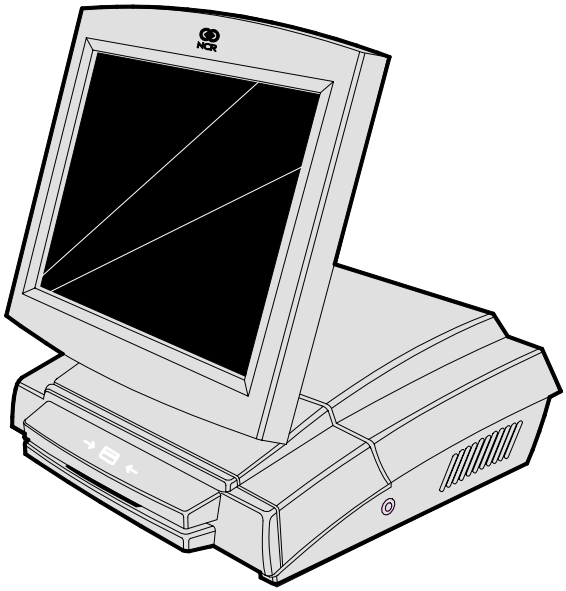
NCR 7460 Retail Terminal

Release 1.2

Hardware User's Guide



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Issue D

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Address correspondence to:

Manager, Information Products
NCR Corporation
2651 Satellite Blvd.
Duluth, GA 30096

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Preface

Audience

This book is written for hardware installer/service personnel, system integrators, and field engineers.

Safety Warnings

Warning: No user serviceable parts. Servicing should only be performed by a qualified service technician.

Caution: For continued protection against risk of fire, replace only with the same type and ratings of fuse.

Attention: Pour prévenir et vous protéger contre un risque de feu, remplacer la fusible avec une autre fusible de même type, seulement.

Power Supply Cord Used as Disconnect Means

Caution: The power supply cord is used as the main disconnect device. Ensure that the socket outlet is located/installed near the equipment and is easily accessible.

Attention: Le cordon d'alimentation est utilisé comme interrupteur général. La prise de courant doit être située ou installée å proximité du matériel et être facile d'accés.

Warning: DO NOT connect or disconnect a printer, keyboard, or any other terminal-powered peripheral while the terminal is powered on. Doing so may result in peripheral or system damage.

Fuse Replacement

Caution: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. Switzerland (only) refer to Anex 4.10 of SR 814.013.

Attention: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur. Mettre au rébut les batteries usagées conformément aux instructions du fabricant.

Recycling

Contact local NCR representative for information regarding proper disposal and recycling of equipment.

Attention: Pour prévenir et vous protéger contre un risque de feu, remplacer la fusible avec une autre fusible de même type, seulement.

Peripheral Usage

This terminal should only be used with peripheral devices that are certified by the appropriate safety agency for the country of installation (UL, CSA, TUV, VDE) or those which are recommended by NCR Corporation.

Environmental Consciousness

NCR is demonstrating its concern for the environment by designing an intelligent power management system into this terminal that operates efficiently whether the system is in a stand-alone or network environment.

References

- *NCR 7460 Retail Terminal Site Preparation Guide* (B005-0000-1281)
- *NCR FitClient Software User's Guide* (B005-0000-1235)
- *NCR 7460 Retail Terminal Parts Identification Manual* (B005-0000-1282)
- *NCR 7460 Retail Terminal Service Guide* (B005-0000-1338)

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Revision Record

Issue	Date	Remarks
A	Feb 01	First issue
B	Jun 01	Add Peripherals: Printers, Cash Drawers
C	Oct 01	Update BIOS information
D	Jan 02	Added BIOS Crisis Recovery procedures

Radio Frequency Interference Statements

Federal Communications Commission (FCC)

Information to User

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user will be required to correct the interference at his own expense.

NCR is not responsible for any radio or television interference caused by unauthorized modification of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by NCR. The correction of interference caused by such unauthorized modification, substitution or attachment will be the responsibility of the user. The user is cautioned that changes or modifications not expressly approved by NCR may void the user's authority to operate the equipment.

Canadian Department of Communications

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le règlement sur le brouillage radioélectriques édicté par le ministrère des Communications du Canada.

Voluntary Control Council for Interference (VCCI)

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Declaration of Conformity

Manufacturer's Name	NCR Corporation
Manufacturer's Address	NCR Corporation Retail Solutions Division— Atlanta 2651 Satellite Boulevard Duluth, GA 30096-5810
Type of Equipment	Information Technology Equipment
Model Number	Class 7460
Electrical Ratings (Input)	100-120 V/200-240 V, 4.0 A/2.0 A, 50-60 Hz

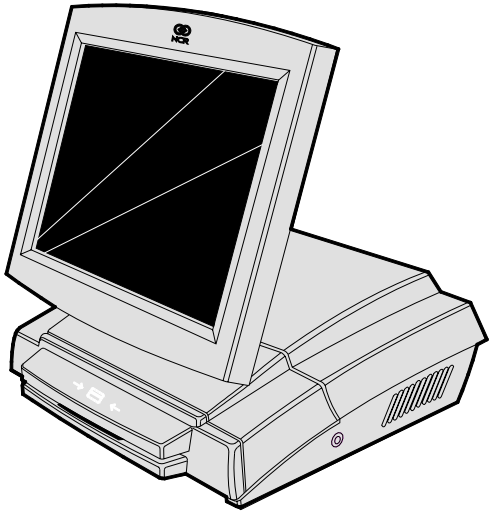
NCR Corporation, 1700 South Patterson Boulevard, Dayton, OH 45479, USA, declares that the equipment specified above conforms to the referenced EU Directives and Harmonized Standards.

EU Directive	Harmonized Standard(s)
89/336/EEC (EMC)	EN 55022: 1987 (CISPR 22) EN 50082-1, Part 1: 1992 IEC 801-2: 1984 IEC 801-3: 1984 IEC 801-4: 1988
73/23/EEC (Low Voltage)	EN 60 950: +A1+A2: +A3 + A11

NCR Corporation
Retail Solutions Division— Atlanta
2651 Satellite Boulevard
Duluth, GA 30096-5810

European Contact:
International IP Counsel
206 Marylebone Road
London, NW1 6LY, England

Chapter 1: **Product Overview**



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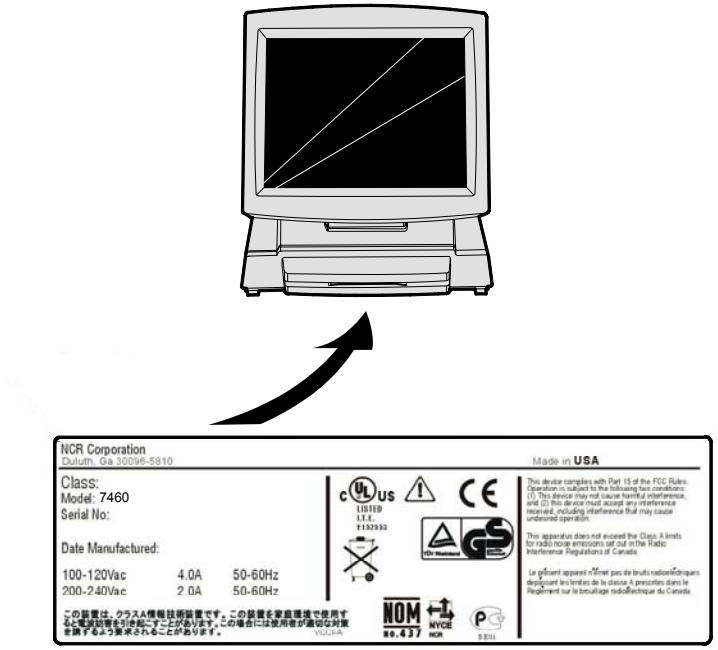
Introduction

The NCR 7460 Retail Self Service Terminal is an interactive touch screen terminal designed specifically for the hospitality marketplace. Housed in an integrated, compact cabinet, the 7460 supports a complete set of peripherals.

The major hardware features of the 7460 are a flat panel display with touch screen input and LAN connectivity and magnetic stripe reader.

The 7460 is Internet/Intranet ready. System loading occurs from a network server, and software and data content are delivered from a server through standard internet protocols.

Serial Number Labels



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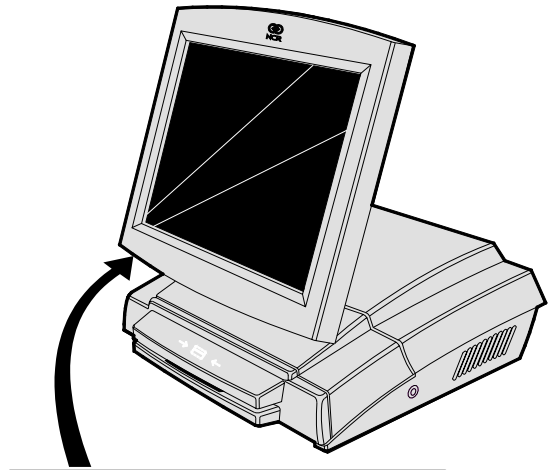

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Hardware Modules

Base Unit

- Processor Board
  - Celeron-class processor
  - SVGA chipset
  - MPEGII chipset
  - 4 MB Flash BIOS (not CMOS)
  - 32 MB Flash Disk (optional)
  - Four RS-232 ports (three powered)
  - 10/100BaseT Ethernet LAN chipset, Wake-on-LAN support, and RJ-45 port
  - Two USB type A ports
  - PS/2 keyboard port
  - External VGA display port. (This does not allow different information on each display. If you use an external display, you get the same screen that you do on the operator display.)
  - Internal PS/2 mouse (dedicated to the touch screen)
  - Two DIMM RAM socket
  - IDE support for a hard disk
  - Cash drawer port
- 12.1-Inch Operator Display – resistive touch LCD
- 3.5-Inch, low or high capacity hard disk
- Integrated Power Supply
- 3-meter Ethernet cable
- U.S. power cord

Hardware Options

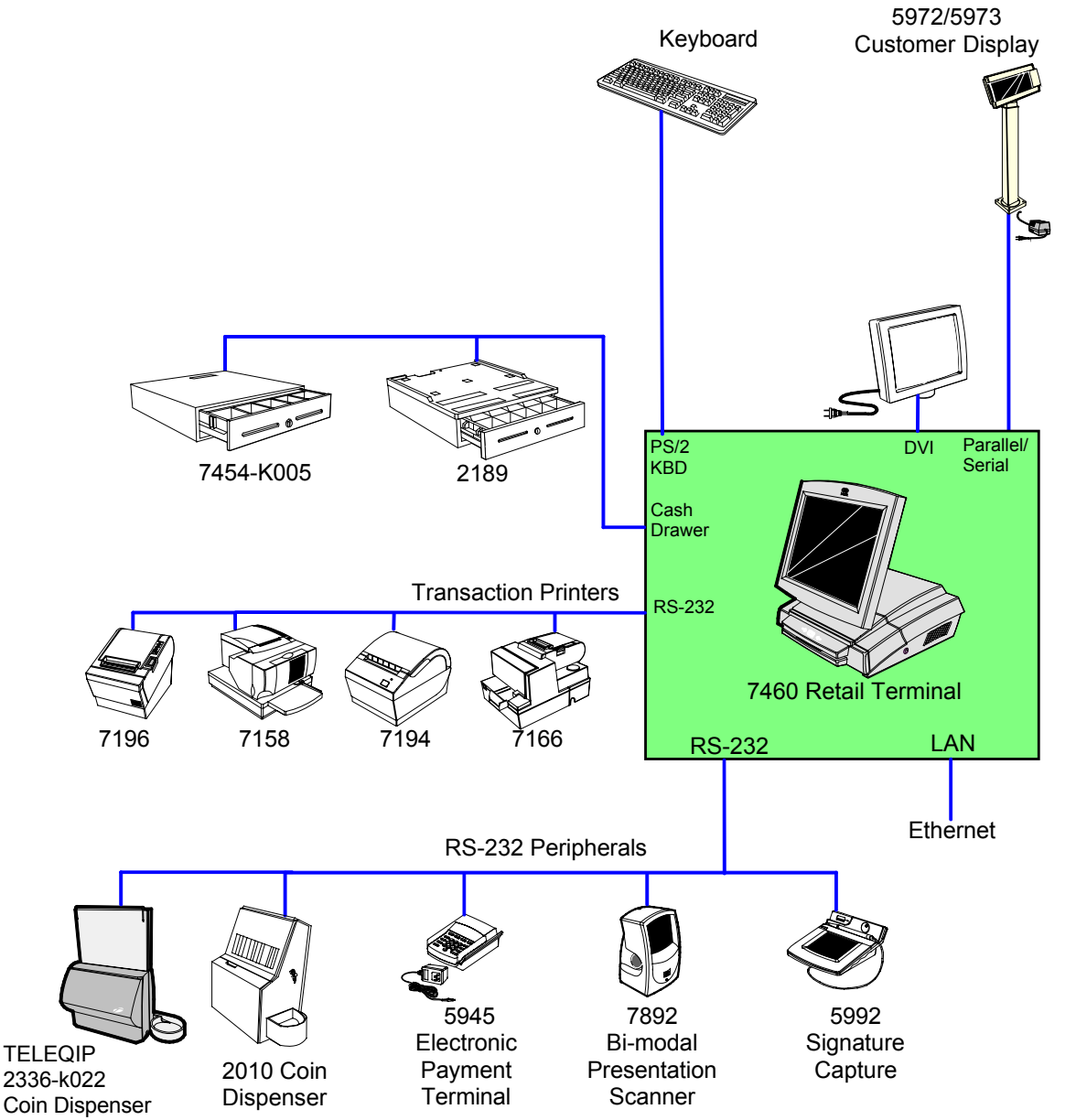
- Integrated 3-track ISO MSR
- Mounting options: Wall
- 7892 Hand-held Scanner
- Customer displays
  - Integrated 2x20
  - Remote 2x20
- 32 MB flash disk
- Cash drawers
  - 2189 Cash Drawer (modular)
  - 2113 Cash Drawer (modular)
  - 7454-K005 Mid-range Cash Drawer (modular)
- 7460 Printers:
  - 7194, 7196, 7158 Printers
  - Remote printer cables
  - Signal extenders for remote printers
- PC keyboard

Terminal Components not Supported

It is important to note that the terminal does not support the following components.

Not supported	Alternative implementation
CMOS for hard totals, logs, and tallies	Hard disk, flash disk, or server storage
Removable media, e.g., a flex disk	LAN communication to an NT server via standard protocols
SLP terminal loading	Local storage and TCP/IP networking
Keylock for security (X, L, R, S)	Reset switch based security
ISA and PCI Expansion slots	USB and LAN based devices (future)
DVD ROM	
Internal UPS	External UPS
Manual Video and audio controls	Server
Windows 3.1, Windows NT 3.51, OS/2	NT 4.0, DOS
	Pentium III 850 MHz

System Configuration Diagram



Hardware Module Descriptions

Processor Board

Processor/Chip Set

The terminal uses an Intel architecture processor, which permits it to leverage existing software drivers and applications, as well as provide the greatest flexibility in choosing an operating system. This provides several other advantages:

- Capable of SW MPEG-1 or MPEG-2 playback at 30 frames per second with 22 kHz stereo audio (may be limited by OS constraints).
- Java Benchmark performance > 1000 Caffeinemarks, JIT compiled
- OS support to run Java
- Expansion capabilities for optional features and future requirements (ISA/PCI bus and USB)

Video Subsystem

The video subsystem supports the following LCD types:

- 12.1" active matrix (TFT) 800x600 with 64 k colors

Support for the LCD integrated display is provided internally. External support for SVGA monitors (800x600 [or better] resolution and 64 k [or better] colors) is provided by a CRT 15-Pin D-shell connector.

The LCD back lighting is also software controlled. In addition to OFF and ON modes, a *dimmed* mode is supported in the hardware to allow increased tube life. If appropriate software drivers are loaded, full brightness is restored when touched, motion detection (Motion Sensor section), or an application request (i.e., to play promotional material on a preset schedule).

Ethernet 10/100Base-T LAN Communications

The terminal contains a 10/100Base-T Ethernet PCI connection. Ethernet 100Base-T is also known as "Fast Ethernet." The Boot ROM for diskless boot functionality is included in the 1 MB system ROM. The hardware is compatible with the TCP/IP, DHCP, and TFTP protocols required for remote boot of the platform. Appropriate software must be used to enable each protocol used over the Ethernet link.

The terminal may be connected to either a 10 MB/s or 100 MB/s Ethernet connection. The hardware automatically selects the correct speed (if enabled by software to do so).

The LAN hardware supports wakeup packet capability as defined in the Device Class Power Management Specification, Network Device Class (available from Microsoft's web site).

When the platform is in the Soft OFF state (refer to the Power Management section), receipt of a Wakeup Packet on the LAN can return the system to the ON state, if this feature is enabled by software.

Note: Due to limitations of the LAN controller and the OS, all features described in the Network Device Class specification may not be available.

100Base-T is wired identically to 10Base-T, except that the twisted pair cable must be Category 5 and the hubs must permit 100 or 10/100 MB/s operation. Although 10Base-T will operate on Category 3 twisted pair, or NCR "747" cable, an upgrade to Category 5 is required for 100Base-T.

A customer desiring to use the terminal in an existing 10Base-T environment can do so and simply run at 10 MB. ***In order to upgrade to 100MB/s, Category 5 cable and 100 or 10/100 hubs must be installed.*** NCR strongly recommends the use of Category 5 for all new cabling, even if the customer initially intends to run only 10Base-T.

LED Indicators for Link Integrity (verifies cable and hub connection are good) and LAN speed is provided on the processor board near the row of connectors at the bottom of the e-box. The LED is ON (yellow) when the speed is running at 100 MB/s.

Link Integrity is provided to the PC chipset to permit boot-up software to verify the presence of the LAN connection. Software must allow 2 seconds after power-up in order for the Link Integrity signal to become valid.

Universal Serial Bus

Two USB Type-A ports are provided on the terminal. USB Host Controller support is provided in hardware on the processor board.

Note: USB peripherals require support from the operating system, which is currently limited to Windows 98.

Serial Ports

Note: The terminal supports up to four RS-232 ports. Four 9-pin D-shell connectors are provided. RS-232 COM 2, 3 and 4 has +12 VDC power on one pin.

RS-232 Connector Pinout (DB-9 connector, male)					
Pin	**Connector 1/2/3**	**Connector 4**	**Pin**	**Connector 1/2/3**	**Connector 4**
1	DCD	DCD	6	DSR	DSR
2	RXD	RXD	7	RTS	RTS
3	TXD	TXD	8	CTS	CTS
4	DTR	DTR	9	RI or +12 VDC	RI
5	GND	GND			

Hardware Monitor

The hardware monitor generates an interrupt to the system whenever any of the internal voltages used by the system processor goes above or below the acceptable operating range. An interrupt is also generated when the temperature of the Processor exceeds safe levels. Software can use this indication to slow or stop the system and/or force a reset.

Mini PCI Expansion Header

A single Mini PCI expansion header is provided to support optional features.

IDE Header

A standard IDE header is provided to support the 3.5-inch hard disk drive.

Touch Screen Controller

The MicroTouch "Excalibur" chip is used to interface the touch panel. This controller supports MicroTouch resistive and capacitive panels.

In order to save an RS-232 port, the touch data is delivered to the system through the mouse interface. This requires a mouse-aware touch device driver for the appropriate OS.

When the system is operating in the *dimmed* display mode, touch activity can restore full brightness if instructed by software to do so. When system is in *low power* mode, touch activity can generate the mouse port interrupt (IRQ12).

Processor Board Connectors

All connectors are either keyed or impossible to plug incorrectly due to mechanical design of the product.

External Connectors	Internal Connectors
VGA CRT RGB 15-pin D Shell	Mini PCI Expansion header
Ethernet RJ45	IDE
Dual USB Type A	Parallel port – Customer Display
DVI-LCD	Cash Drawer port
Power supply	
RS-232 9-pin D shell (four, three with +12 V power	
PS/2 Keyboard	
Parallel Port	
MSR	
Cash Drawer	
20-pin high density RS-232 Conversion connector	
S-Video	

Flash Disk

32 MB flash disks provide non-volatile storage that is additional to and separate from the hard disk, allowing storage for items traditionally placed in retail CMOS, e.g., hard totals. OPOS drivers are available to support the flash disk.

For applications requiring larger amounts of non-volatile storage, flash disks up to 72 MB are available from M-Systems. The system sees these flash disks as hard drives when the proper software support is provided.

Flash Disk Interface

The board provides support for a flash disk array in the form of an M-Systems *Disk-on-Chip*. A 32-pin socket is provided for this feature. The flash disk must be installed and enabled in *BIOS Setup*.

NCR Retail Specific Hardware

The Processor Board contains logic that provides support for the custom retail interface. The logic controls the following features:

- Flash Disk Interface
- Cash Drawer Support
- Cash Drawer Diagnostic Support
- Magnetic Stripe Reader Interface
- Touch Screen Interface

MSR

The MSR interface supports a maximum of 3 tracks of magnetic stripe information for support of ISO format cards. Activate the MSR interface by enabling it in *BIOS Setup* under IO Configuration. The MSR interface controller is a memory-mapped device, which can reside at system memory addresses DA000-DBFFF, or DE000-DFFFF. If MSR capability is not desired, it may be disabled through BIOS Setup.

Graphics Subsystem

The Celeron processor board is equipped with a integrated AGP graphics using Intel 810 Chipset

Resolutions Supported

Resolution	Colors	Max Vfreq
640x480x8bpp	256	85 Hz
640x480x16bpp	64 k	85 Hz
640x480x24bpp	16 M	85 Hz
800x600x8bpp	256	85 Hz
800x600x16bpp	64 k	85 Hz
800x600x24bpp	16 M	85 Hz
1024x768x4bpp	16	85 Hz
1024x768x8bpp	256	85 Hz
1280x1024x8bpp	256	60 Hz

Colors Supported

Resolution	256 Colors (8-Bit)	65,000 Colors (16-Bit)	16.7 M Colors (24-Bit)
640x480	512 k	1 MB	1 MB
800x600	512 k	1 MB	2 MB
1024x768	1 MB	2 MB	4 MB
1152x1024	2 MB	2 MB	4 MB
1280x1024	2 MB	4 MB	4 MB

Board BIOS

The Processor board uses a Phoenix BIOS, which is stored in Flash ROM and easily upgraded through the network connection or serial port. The Flash EEPROM also contains the Setup utility, Power-On Self Tests (POST), and APM 1.2. The board also supports system BIOS shadowing, allowing the BIOS to execute from onboard write-protected DRAM.

The BIOS displays a sign-on message during POST identifying the type of BIOS and a five-digit revision code.

FLASH memory Implementation

The Intel 82801AB Firmware Hub (Flash ROM) is organized as a 512KBx8 device (4Mb total). It is divided into eight blocks, each of 64KB size. The physical ROM occupies FFF80000h through FFFFFFFFh in high memory and the run-time BIOS occupies E4000h through FFFFFh in lower memory.

BIOS Upgrades

Flash memory makes distributing BIOS upgrades easy. A new version of the BIOS can be installed from the hard disk, network or through a serial port.

The disk-based Flash upgrade utility, PHLASH.EXE, ensures the upgrade BIOS extension matches the target system to prevent accidentally installing a BIOS for a different type of system.

Setup Utility

The ROM-based Setup utility allows the system configuration to be modified without opening the system for most basic changes. The Setup utility is accessible only during the Power-On Self Test (POST) by pressing the <F2> key after the POST memory test has begun and before boot begins. A prompt may be enabled that informs users to press the <F2> key to access Setup.

Note: An external alphanumeric keyboard is not required to run the BIOS CMOS Setup Utility, but is recommended for ease of use.

Plug and Play

The Processor BIOS also has a setup option to support the Windows runtime plug and play utilities. When this option is selected, only devices critical to boot are assigned resources by the BIOS. Device Node information is available for all devices to ensure compatibility with Windows 95. System configuration information is stored in ESCD format. The ESCD data will be cleared upon loss of the CMOS voltage.

Advanced Power Management

The Processor BIOS has support for both 1.1 and 1.2 Advanced Power Management (APM). The version of APM drivers loaded in the operating system by the user will determine to which specification the BIOS will adhere. In either case, the energy saving Standby mode can be initiated by a time-out period set by the user.

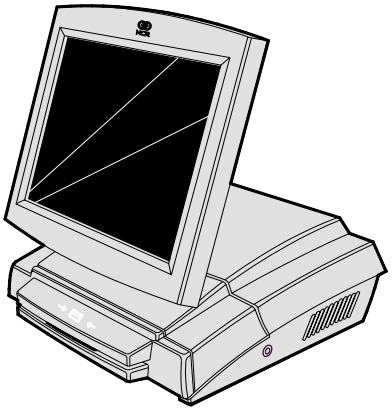
When in Stand-by mode, the Processor Board reduces power consumption by utilizing the processor System Management Mode (SMM) capabilities and also spinning down hard drives and turning off VESA DPMS compliant monitors. During setup, the user may select which DPMS mode (Stand By, Suspend, Auto, or Off) is sent to the monitor. The ability to respond to external interrupts is fully maintained while in Stand-by mode allowing the system to service requests such as in-coming data or network messages while unattended. The user may also make any keyboard or mouse activity to take the system out of the energy saving Standby mode. When this occurs, the monitor and IDE drives are turned back on immediately.

Advanced Power Management (APM) is achieved by the following:

- DOS requires a driver (FS-APM.dos)
- NT requires a driver (NCRSYSM.SYS)
- Win 95 & 98 enable the BIOS APM setting, APM is disabled by default.
- Windows 2000 must enable the operating system APM setting. The OS APM setting is disabled by default. NCR Gold Drivers are enabled in this setting by selecting:

  Start, Control Panel, Power Options, APM tab, check the box **Enable Advance Power Management Support**, and click **OK** to finish.

Operator Display



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The 7460 is available with a 12.1" TFT (active matrix) 12.1" LCD.

LCD Adapter Board

The signals from the LCD header on the processor board are brought to the LCD on a harness. Since there are multiple pin configurations and connector types being used on the LCD, a small adapter board is used to receive the LCD harness and map the signals into the correct pin-out for the LCD panel. This board has a connector that plugs directly into the LCD panel.

LCD Backlight Inverter Module

The backlight for the 7460 is contained on the LCD Adapter Board.

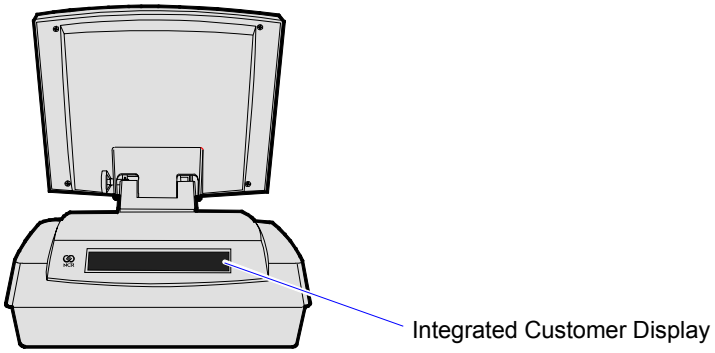
Touch Screen

The Touch Screen completely covers the LCD and is mounted directly in front of the LCD, behind the front plastic bezel of the terminal. The touch controller on the Processor Board supports resistive touch glass.

The touch glass has an integrated harness that is routed into the LCD Board enclosure and is connected to a header on the LCD Board. The touch glass has a glare-reducing texture that also helps hide fingerprints.

NCR 7460 Integrated Customer Display

The NCR 7460 Integrated Customer Display supports two lines of twenty 5x7 characters.



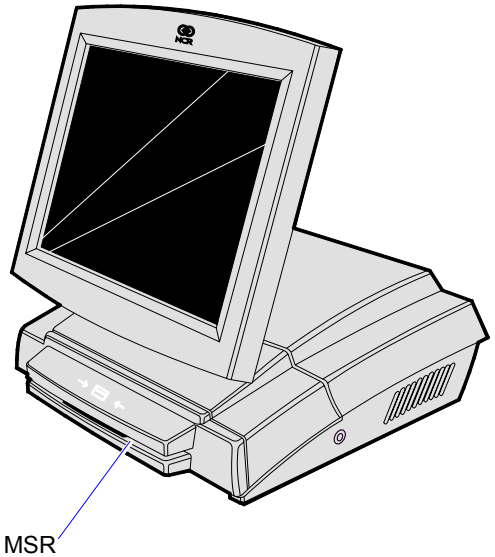
18892

The 7460 Retail Terminal also supports the NCR 5972-1000 Vacuum Fluorescent Display. This display uses a serial port.

Features

Magnetic Stripe Reader

A single 3-track analog Magnetic Stripe Reader (MSR) is available as a feature, supporting ISO format cards. When the MSR is not desired, a filler piece for the MSR section is included to make the unit appear uniform.

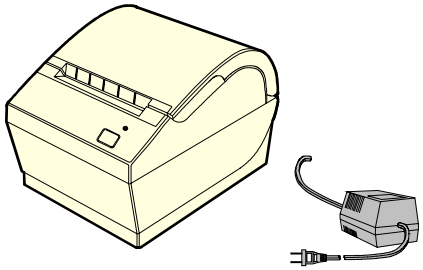


Printer Options

The printer receives its power from external power supply, has a serial interface and a connector for cash drawers. The sections that follow provide an illustration and brief description of each printer.

NCR 7194 Printer

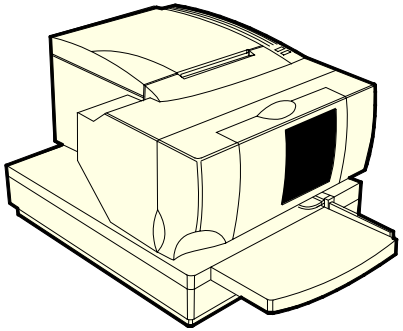
The NCR 7194 Printer is a high speed, high-resolution printer, capable of both text and graphics printing**.** It offers direct thermal printing in a receipt station**.** The NCR 7194 can connect through a USB port or a serial port.



16437

7158 Printer

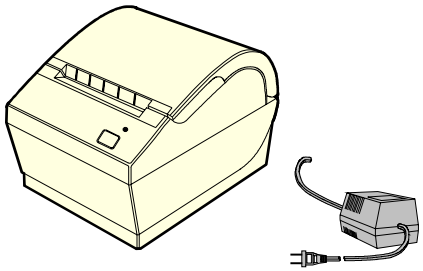
The 7158 Printer is extremely fast, quiet, and reliable point-of-sale device. It consists of two specialized printers in one compact package: a thermal printer on top that prints receipts, and an impact slip printer in front to print on forms and checks that you insert. It receives its power from an external power supply, can be connected through a USB or serial port, and has a connector for cash drawers.



17304

7194 Printer

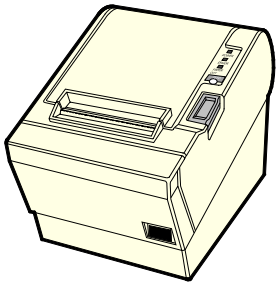
The 7194 Printer is a high speed, high-resolution printer, capable of both text and graphics printing. It offers direct thermal printing in a receipt station. It receives its power from an external power supply, can be connected through a USB or serial port, and has a connector for cash drawers.



16437

7196 Printer

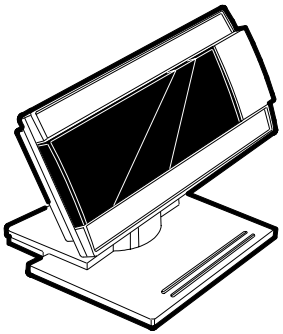
The 7196 Printer is a high speed, high-resolution printer, capable of both text and graphics printing. It receives its power from an external power supply, has a serial interface and a connector for cash drawers.



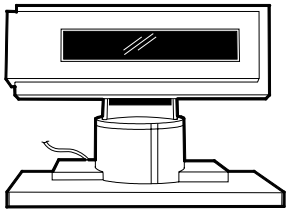
17302

NCR 5972 2x20 Customer Display

The 5972-1000 2x20 Customer Display is offered in two versions Vacuum Fluorescent Display (VFD) or Liquid Crystal Display (LCD).

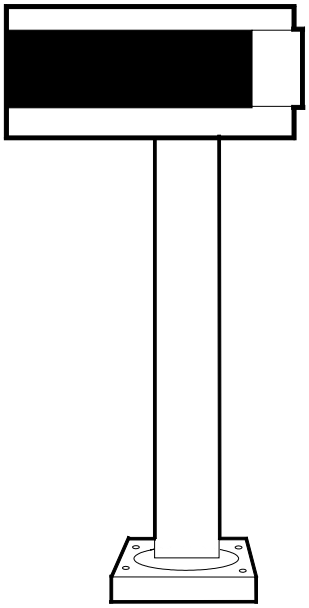


Vacuum Flourescent Display

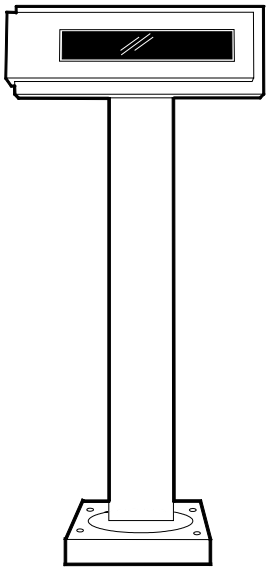


Liquid Crystal Display

15476



Vacuum Flourescent Display



Liquid Crystal Display

15475

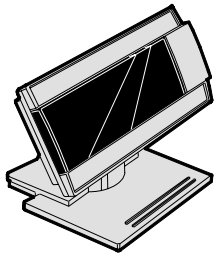
Features

- Models
- Integrated
- Remote
- Remote (Tall Post)
- Parallel I/F support
- EIA-232 I/F support
- Socket for 32K of PROM for additional character sets 7x9 pixel characters
- Diagnostics
- Character sets:
  - Code Page 850 (International)
  - Katakana
  - Code Page 866 (Cyrillic)

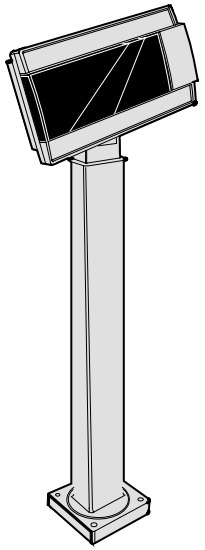
NCR 5973 International VFD Customer Display

The NCR 5973 VFD (Vacuum Fluorescent Display) is an optional display device for the 7460 Retail Terminal. The VFD is available in models that have a combination of:

- Dark gray cabinetry
- Mounting configurations
- System specific cables



Remote Mount



High-Post Remote Mount

12271a

Other Integrated Devices and Indicators

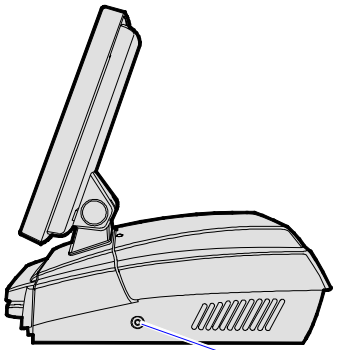
Hard Disk Drive

A 3.5-inch IDE hard disk is available to support Windows NT. The drive is the standard type that is used by notebook PCs.

Power/Status LED

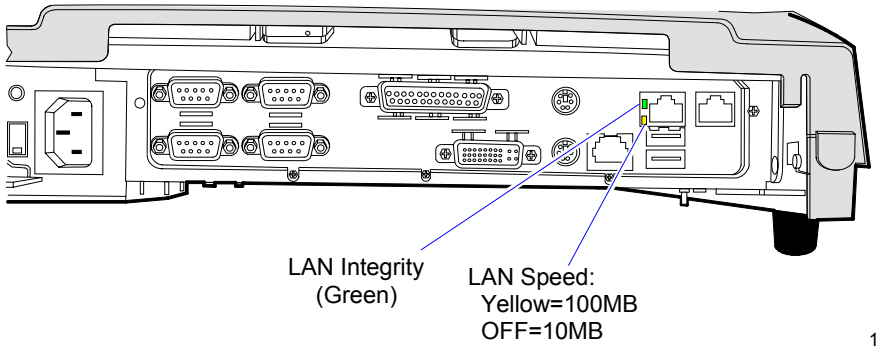
The LED power indicator indicates that power is present. The LED is green when the processor and BIOS are operating properly. The LED is located on the right side of the chassis as illustrated.

Note: The 7460 has a time delay. To place unit in the OFF position depress the ON/OFF switch and hold the switch for 4.5 seconds until unit powers down.



18494c

LAN Status LEDs



Power Supply

The terminal uses an AC adapter for its power supply, concealed in the terminal mounting. The supply is inaccessible when the terminal is in the normal operation and mounting position to prevent tampering, and sealed to help protect against spills or other environmental hazards.

Note: The power supply DOES NOT automatically sense the proper AC voltage; therefore, the switch on the back must be set prior to installation.

All power required to operate the base unit and bus-powered USB peripherals is provided by the power supply.

The Processor board serves as the hub to distribute power to all terminal functions. Cash drawers, VFD customer display, PS/2 keyboard, Mini PCI slot, scanner (through RS-232 port), USB, hard disk, and the LCD all receive power through their respective processor board connectors.

Chapter 2: Hardware Installation

Introduction

The terminal is fully assembled at the factory. This chapter explains the mounting options and how to connect optional hardware components to the terminal.

Installation Summary

The terminal should be removed from the shipping packaging and visual checks made to verify the correct hardware configuration. The system is then configured and any communication cables are connected.

Note: Verify the appropriate voltage setting prior to initial setup.

Only after inspection should the power cord be attached to the system and then connected to the AC power source. Power-up self-tests will run to verify basic functionality.

ROM-based setup should be used to configure network options. Full configuration depends upon the system server and the management web site.

Installation Restrictions

- Before installing the terminal, read and follow the guidelines in the *NCR 7460 Retail Terminal Site Preparation Guide* (B005-0000-1281) and the *NCR Workstation and Peripheral AC Wiring Guide* (BST0-2115-53).
- Install the terminal near an electrical outlet that is easily accessible. Use the power cord as a power-disconnect device.
- Do not permit any object to rest on the power cord. Do not locate the terminal where the power cord can be walked on.
- Use a grounding strap or touch a grounded metal object to discharge any static electricity from your body before servicing the terminal.
- If the power cord is replaced, it must be replaced with the same type of cord with the protective shroud.
- Do not route the power cord through openings with sharp edges.

Caution: This unit contains hazardous voltages and should only be serviced by qualified service personnel.

Caution: DO NOT connect or disconnect the transaction printer while the terminal is connected to AC power. This can result in system or printer damage.

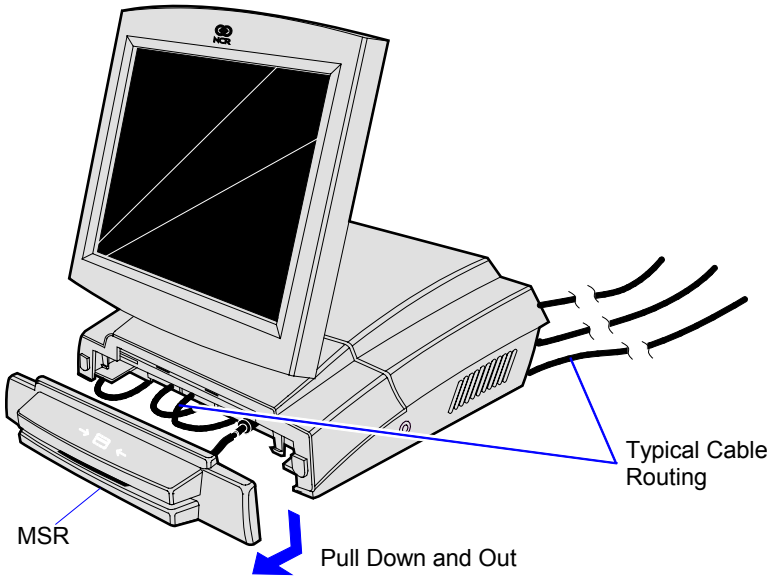
Warning: If wall mounted, the NCR 7460 must be mounted securely to prevent a hazard. It must be installed in accordance with local building codes. The wall on which the unit is mounted should be able to withstand four times the weight of the unit, which is approximately 16 lbs. 2oz. (7.3 kg) for the complete unit and 6 lbs. (2.7kg) for the operator display .

Connecting the Cables

Cable connectors are located on the chassis behind the MSR.

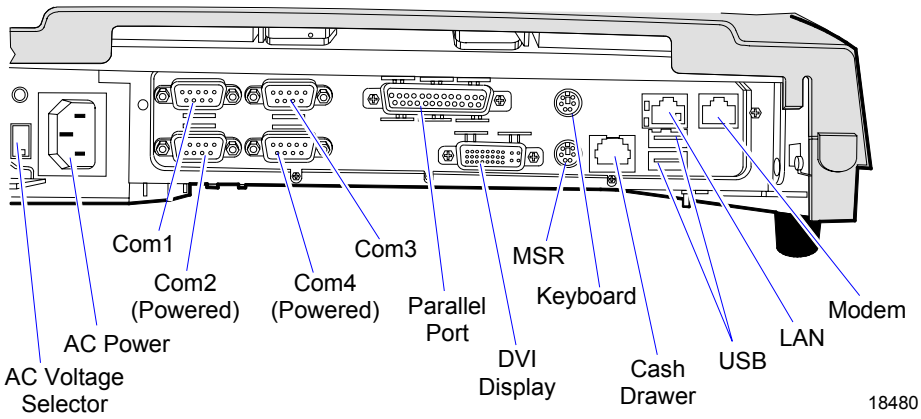
Accessing the Cable Connectors and Routing Cables

1. Remove the MSR by elevating the unit and pulling down and out as illustrated. Route Cables as necessary between the MSR and Chassis.



Identifying the Cable Connectors

The following illustration identifies each of the cable connectors. Refer to the sections following the illustration for specific instructions on installing each peripheral.

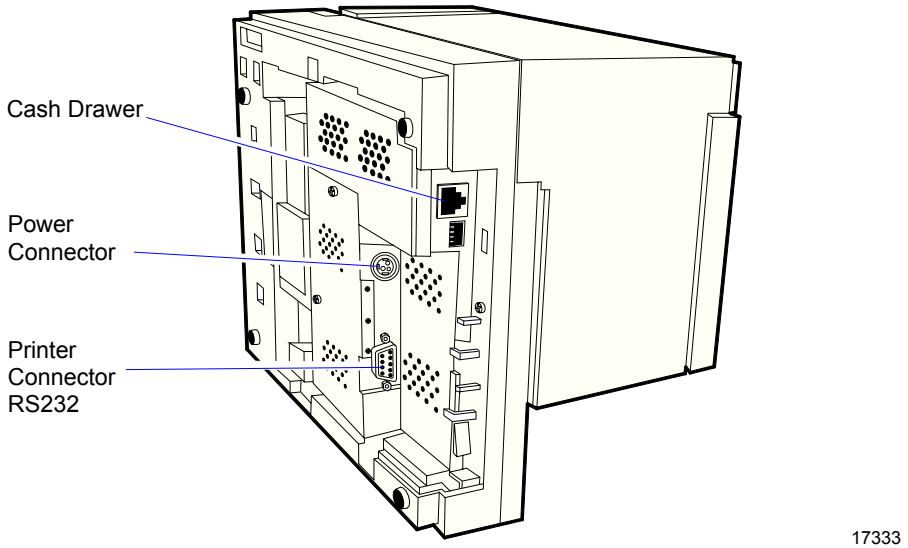


Installing Peripherals

Installing a Transaction Printer

7158 Printer

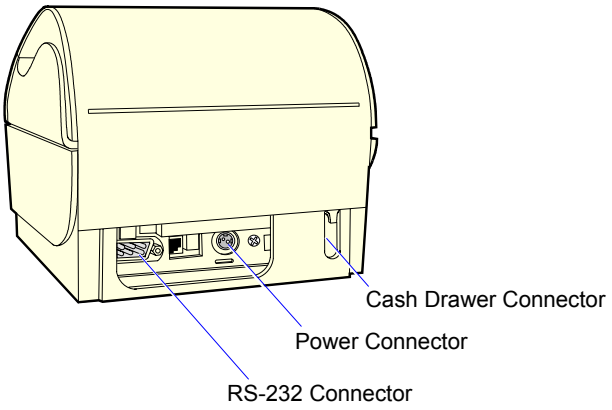
1. Connect the Printer Interface Cable to the *RS-232 Connector* on the printer, located on the underside of the printer.



2. Connect the other end of the printer cable to a USB port or one of the RS-232 ports (non-powered) on the terminal.
3. Connect the Power Brick cable to the *Power Connector* on the printer.
4. Plug the Power Brick into an AC outlet.

7194 Printer

1. Connect the Printer Interface Cable to the *RS-232 Connector* on the printer, located on the underside of the printer.

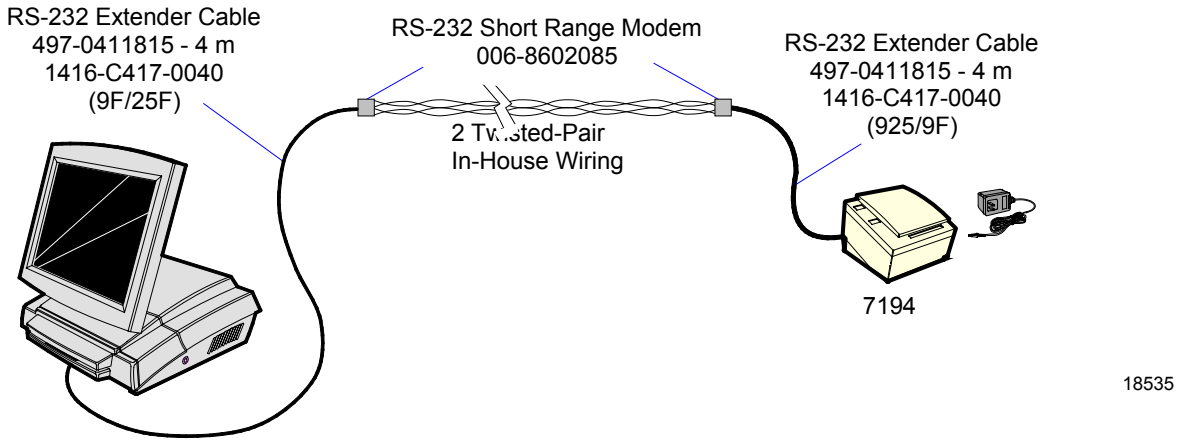


2. Connect the other end of the printer cable to a USB port or one of the RS-232 (non-powered) ports on the terminal.
3. Connect the Power Brick cable to the *Power Connector* on the printer.
4. Plug the Power Brick into an AC outlet.

Note: For information about installing the printer using in-house wiring, refer to the *Feature Kits* appendix.

Serial Modem for 7194 Printers

This kit permits the 7194 printer to be placed in a remote location, away from the terminal. The following steps detail proper connections and settings.



Installation Procedures

1. Install in-house wiring between the locations desired for the terminal and the printer. The ends of the cable should be within 3 meters (10 feet) of the devices for the drop cables to reach.

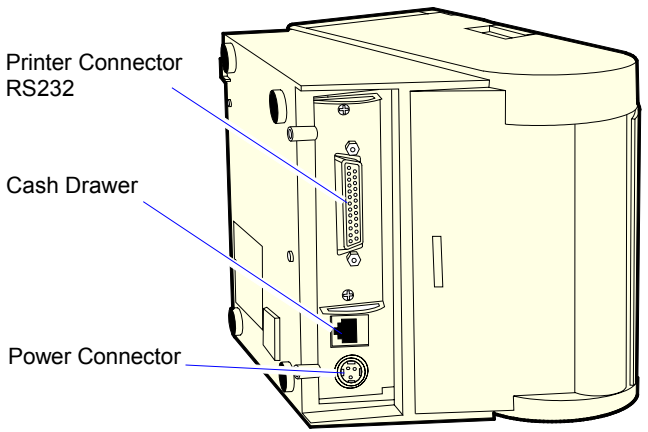
   Note: Use CAT 1 two-twisted pair 24 AWG communications cable or equivalent.

2. Connect a serial modem to each end of the in-house wiring, connecting RCV+ and RCV- on one end, and XMT+ and XMT- on the other end, respectively, using one twisted pair for RCV and another twisted pair for XMT.
3. For the printers, connect one end of the 497-0411815 drop cable to a 9-pin RS-232 port on the terminal. Connect the other end to the serial modem via the 25-pin D shell connector, securing it with the thumbscrews.

4. Connect the appropriate printer drop cable between the other serial modem and the printer, securing all connections with the thumbscrews. The 7194 printer uses NCR cable 497-8601815.
5. Set the switches on both modems to *DTE*, *Printer*, and *CTRL*.
   Restrictions for Usage
   - The short modems must be used with the appropriate NCR cables.
     – 7194 Printer (497-0411815)
   - The modems can not be used with a standard OS printer driver that does not support DTR/DSR flow control such as "generic text driver."
   - The modems cannot be used with software that utilizes the CTS signal.
   - Use only with OPOS 1.4 or later versions.

7196 Printer

1. Connect the Printer Interface Cable to the RS-232 Connector on the printer, located on the underside of the printer.



17331

2 Connect the other end of the printer cable to one of the RS-232 (non-powered) ports on the terminal.

3. Connect the Power Brick cable to the *Power Connector* on the printer.

4. Plug the Power Brick into an AC outlet.

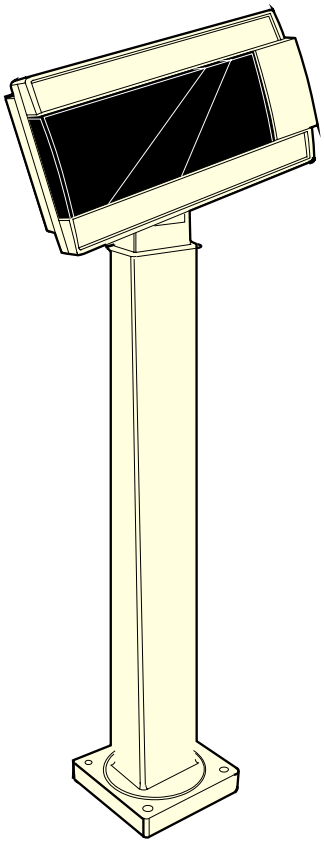
Installing a Remote Customer Display

The terminal supports three high-post remote customer displays. The mounting configuration is the same and appearance is similar:

- 5972-1000/1100 Remote Customer Display (2x20 characters, VFD and LCD)
- 5973 International VFD Customer Display

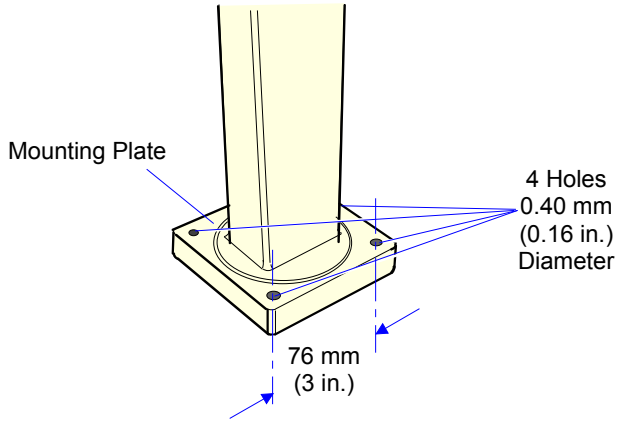
NCR 5972-1000/1100 Remote Customer Display

Connect the 5972 to the RS-232 serial port using one of two configurations offered. Using a power brick or a powered RS-232 port.



16257

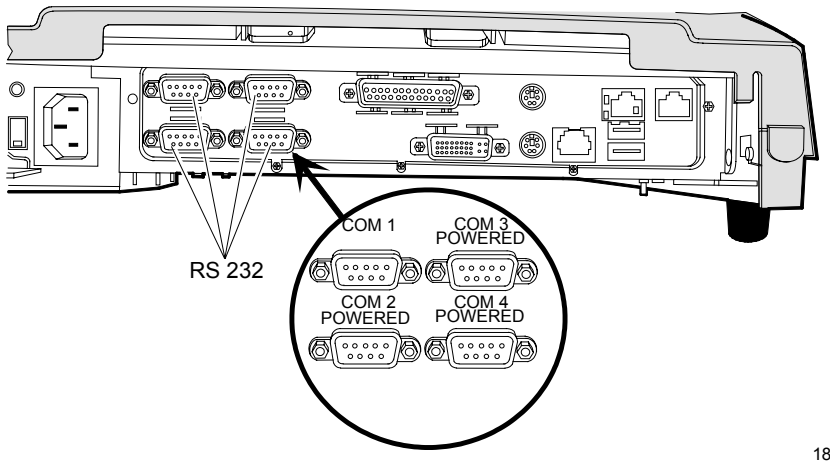
1. Place the Display Mount on the desired surface within 4 meters (13 feet) of the host terminal.
2. Determine if the cable should be routed down through the mounting surface or if it should be run on top of the surface.
3. Secure the Mounting Plate with 4 screws provided.



16258

4. Connect the 5972 Display Cable to the RS-232 Adapter Cable.
5. Connect the RS-232 Adapter Cable to a Serial port on the terminal.

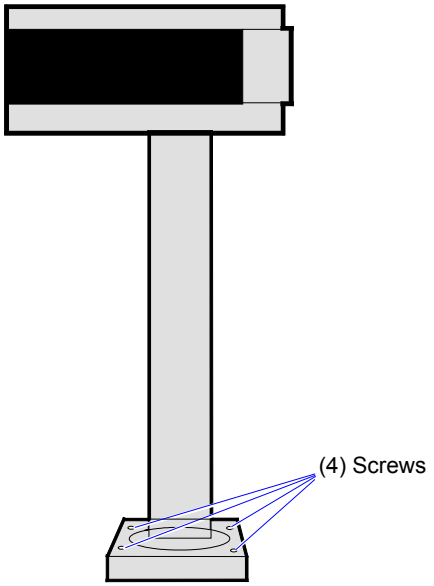
Note: Use the non-powered RS-232 ports if you are installing a display that uses a power brick.



18480d

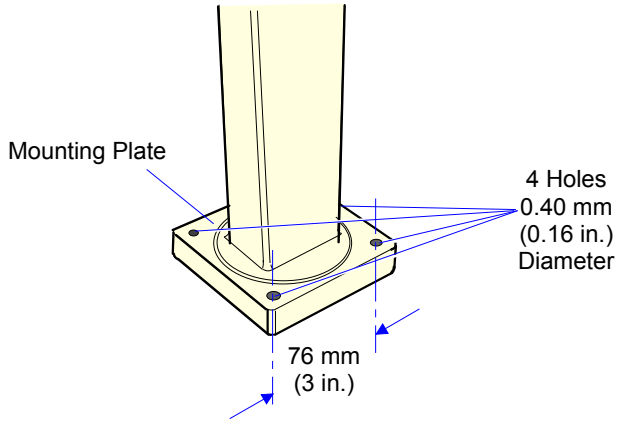
6. If external power is used, connect the 5972 Display Cable Power Pigtail to the Power Brick. Plug the Power Brick into an AC outlet.

5973 International VFD Customer Display

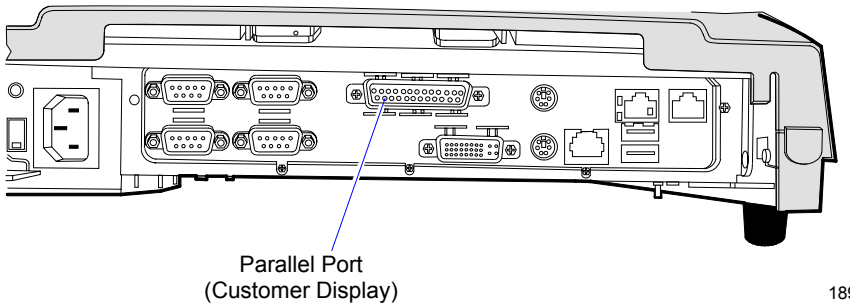


1. Place the Display Mount on the desired surface within 4 meters (13 feet) of the host terminal.
2. Determine if the cable should be routed down through the mounting surface or if it should be run on top of the surface.

3. Secure the Mounting Plate with 4 screws provided.



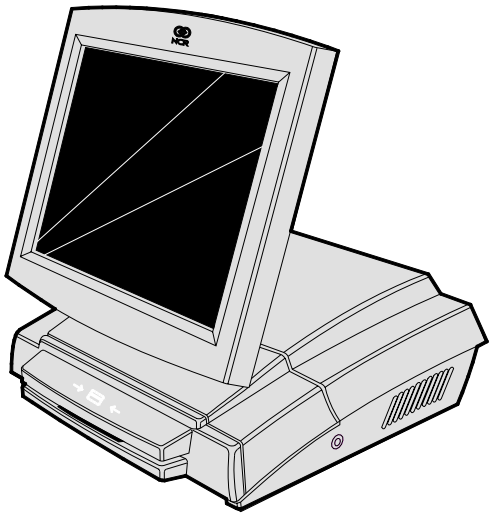
4. Connect the 5973 Parallel Cable to the Parallel port on the terminal.



5. Plug the Power Brick into AC outlet.

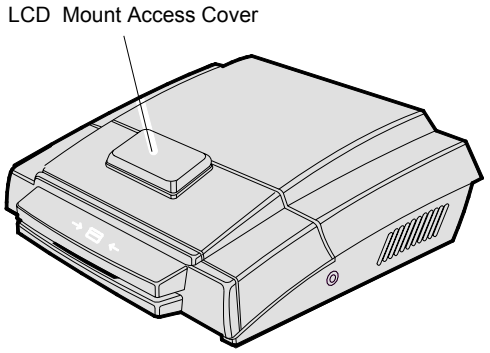
Mounting Considerations

Tilt Mount terminal can be installed on a flat horizontal surface or a flat vertical surface.



18443

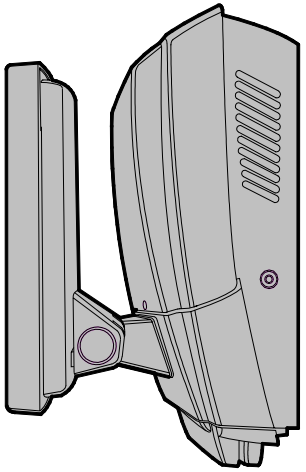
Shown below is the Base Unit option without the Operator LCD. The LCD Mount Access Cover snaps off and on.



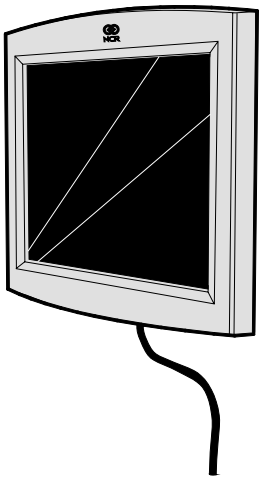
18831

Wall Mounting the 7460

The 7460 unit or the Operator Display can be installed on a flat vertical surface.



7460 Wall Mount



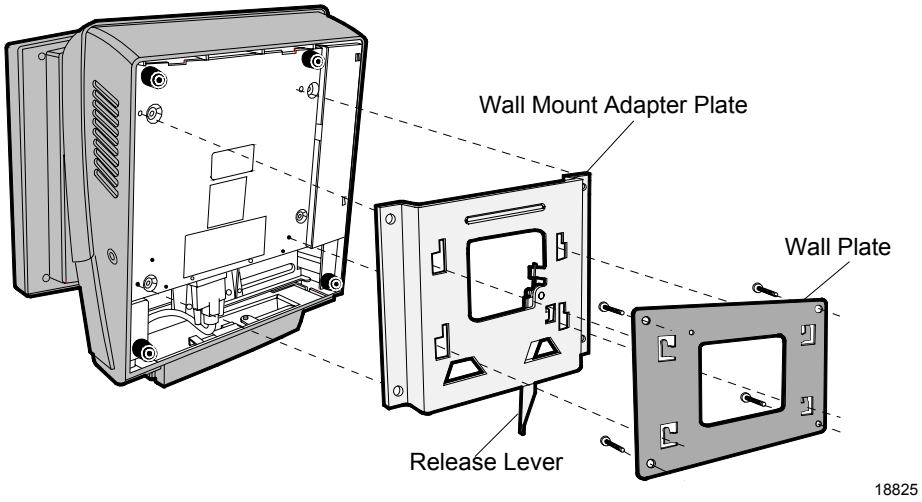
Operator Display Mount

18835

Wall Mounting the Base Unit

To install a wall Mount on a flat vertical surface, use the 7460-K533 Wall Mount Bracket Kit .

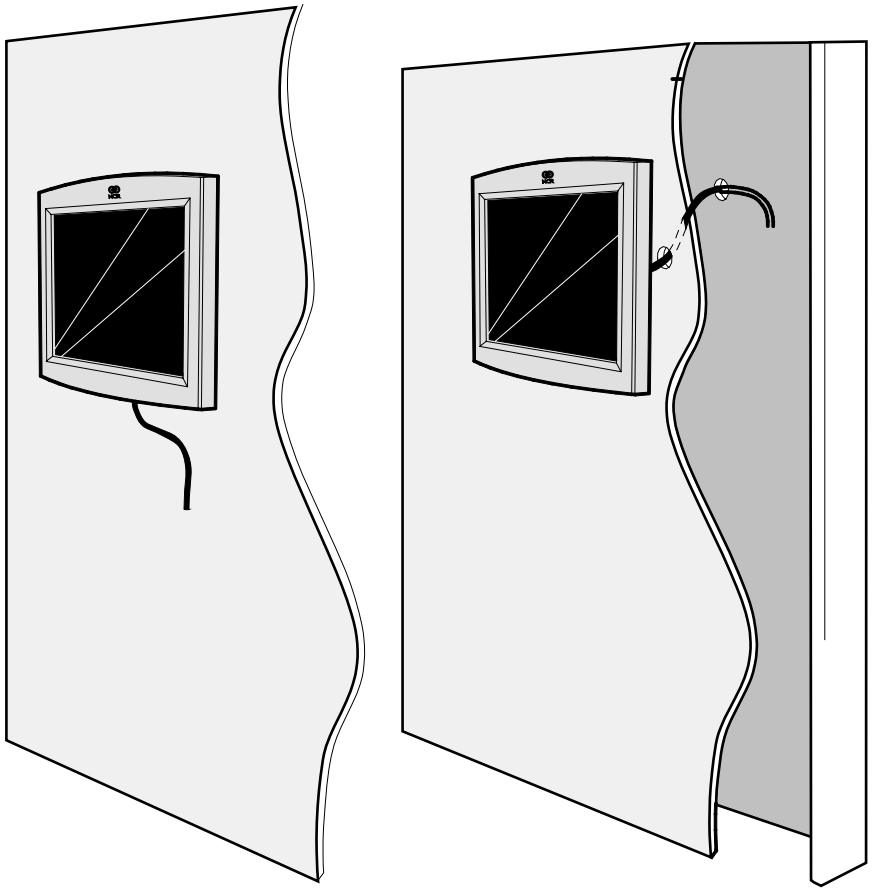
1. Secure the Wall Plate to the wall with lag screws (4) into the studs or with hardware of similar strength. The recommended viewing height for the terminal is 1.2 m (48") from the floor.



2. Install the Wall Mount Adapter Plate to the bottom of the terminal with screws (4) as illustrated.
3. Install the 7460 Terminal to the Wall Plate. The Wall Mount Adapter Plate has locking tabs slots that mate on the Wall Plate.
4. Latch the Release Lever.

Wall Mounting the LCD Operators Display

To flush mount the Operators Display on a flat vertical surface, use the K502 Flush Mount Bracket Kit .



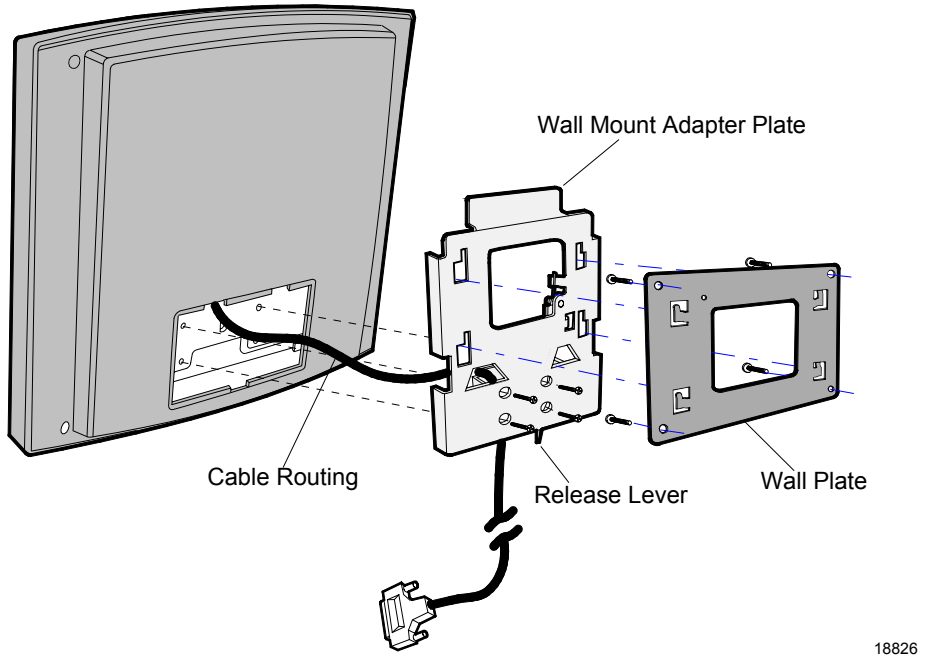
Flush Mount

Flush Mount w/LCD cable penetration through wall

18832

1. Secure the Wall Plate to the wall with lag screws (4) into the studs or with hardware of similar strength. The recommended viewing height for the terminal is 1.2 m (48") from the floor to the center of the screen.

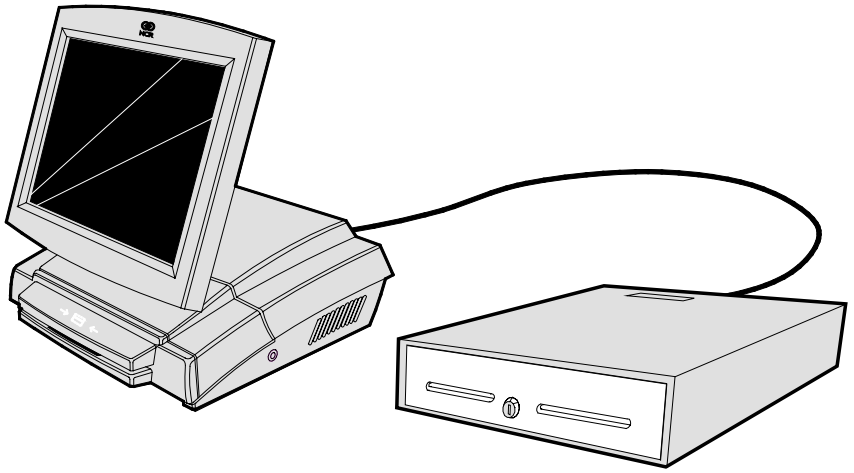
Note: If routing cable through the wall drill a hole in the wall for the cable.



2. Install the Wall Mounting Adapter Plate to the back of the Operator Display with screws (4).
3. Install the Operator Display to the Wall Plate. The bottom of the Wall Mounting Adapter Plate has a Locking Tab that mates to Locking Tab Insert on the Wall Plate. Push Wall Plate down until Locking Tab locks into the insert on the Wall Plate.
4. Latch the Release Lever.

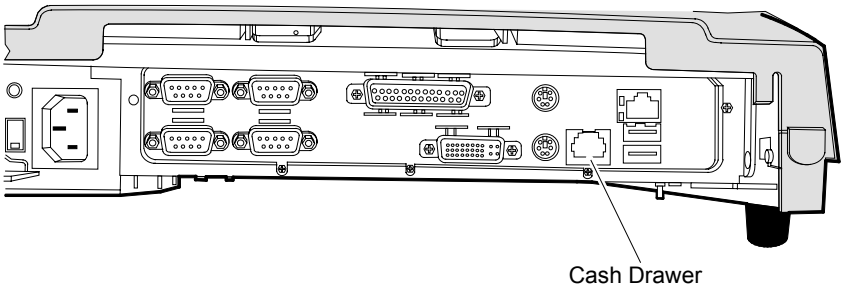
Installing a Cash Drawer

1. Place the cash drawer in the desired location, within cable length of the terminal.



19111

2. Connect the cash drawer cable to the terminal cash drawer connector.



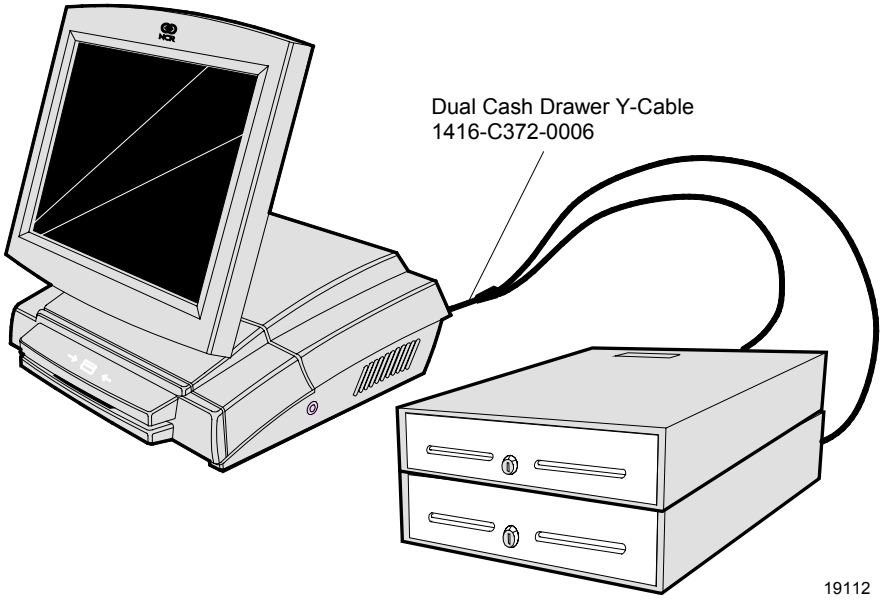
19114

Note: The Cash Drawer can optionally be connected to the printer.

Installing a Second Cash Drawer

The terminal supports a 2-drawer configuration with a Y-cable (1416-C372-0006).

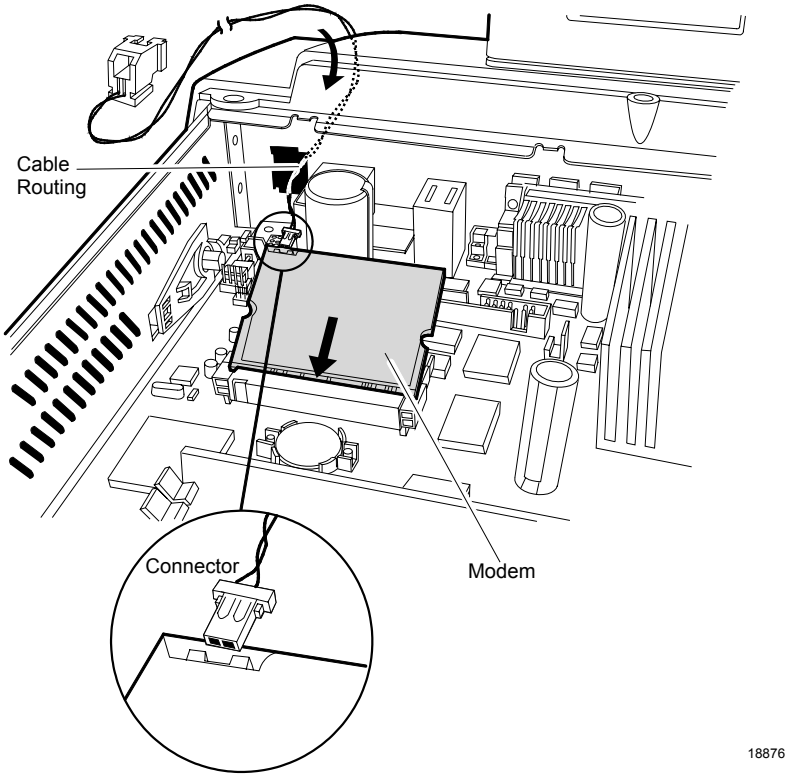
1. Place the cash drawer in the desired location, within cable's length of the terminal.
2. Connect the Y-cable to the terminal cash drawer connector.



Mini PCI 56KB Modem
(*7460-F210)*

Installing the Modem

1. Remove the Hard Drive and cover plate described in *B005-0000-1338 NCR 7460 Retail Terminal Hardware Service Guide.*



2. Remove knockout in the chassis for the modem connector.
3. Route the modem cable through chassis as illustrated.
4. Connect the cable to the modem.
5. Insert modem into PCI Port verifying that the modem seats and locks into place.

Finalizing the Installation

After the hardware installation has been completed, the terminal can be powered up to finalize the installation. The operating system, along with platform modifications, is pre-installed. The following sections list the steps involved to complete the system installation for each of the Gold Disk operating systems.

Completing the OS Installation (WinNT)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, press *Next* at the Windows Setup screen.
2. Accept the Microsoft license agreement.
3. Enter the *User Name* and *Organization*.
4. Enter the *Computer Name* for the client.
5. Enter the *Administrator's Account Password* (optional)
6. When prompted, press *Finish* to reboot the client.
7. Log in when prompted.
8. Open the Control Panel and run the MicroTouch screen calibration.

Completing the OS Installation (Win98)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. When the terminal boots it enters the Windows setup routine.

Note: When installing Win98 on terminals on some early Processor Boards there are few differences in the procedure as follows:

   a) The terminal starts the *Add New Hardware Wizard*.

   b) For each device found, permit Windows to search for new drivers (take defaults).

   c) After each driver is installed you are asked to reboot. Answer **No**.

2. At the **User Information** screen, enter the *User* information. This can be done using a keyboard or you can use the touch screen keyboard. After entering the information, press **Enter** or touch **OK**.
3. Go into the Control Panel and set the terminal Date and Time.
4. In the Control Panel, run the MicroTouch screen calibration.

Completing the OS Installation (Win95)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, press *Next* at the Windows Setup screen.
2. At the **User Information** screen, enter the *User* information. This can be done using a keyboard or you can use the touch screen keyboard. After entering the information, press **Enter** or touch **OK**.
3. Run the MicroTouch screen calibration as described later in this chapter.

Completing the OS Installation (DOS)

The system automatically reboots when the image recovery is complete and opens at the DOS C: prompt.

Installing a Serial Mouse

Follow these steps to install a Serial Mouse on the terminal.

1. Edit the `boot.ini` file, which is located in the root of the C drive.
   a. Open Windows NT Explorer
   b. Go to the **View** menu and select **Folder Options**.
   c. Select the **View** tab.
   d. Scroll down until you see a folder that is labeled **Hidden Files**. Make sure the button labeled **Show All Files** is selected and then select OK.
   e. Select the C drive root directory. Scroll down until you find the file named `boot.ini` and select it.
   f. Open the **File** menu and then select **Properties**.
   g. Uncheck the box labeled **Read Only** and then select **OK**.
   h. Open the `boot.ini` file with Notepad. It should have the following entries:

```
[operating systems]
multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows
NT Workstation Version 4.00" /NoSerialMice

multi(0)disk(0)rdisk(0)partition(1)\WINNT="Windows
NT Workstation Version 4.00 [VGA mode]" /basevideo
/sos
```

2. Delete the text `/NoSerialMice`. The file should now look like:
3. Save the file and then restart the terminal with the serial mouse connected.

After the machine restarts it will see the mouse and install the supporting drivers. The drivers are located on the hard drive at C:\install\i386. If for some reason they are not on the hard drive, connect the terminal to a network and share a CD-ROM drive with the NT Operating System disk installed, or copy the files needed to the network.

Guidelines for Calibrating the Touch Screen

The following guidelines should be observed for calibrating the touch screen.

- Calibration should be done at time of installation
- Recalibrate the touch screen when the system is installed at its final location.
- Recalibrate whenever the terminal is moved to a new location.
- Recalibrate the touch screen anytime the system has been disassembled for servicing.
- Only use the Microcal (DOS) program or the Touchware Control Panel (Windows) to calibrate the touch screen.

  Microcal:

  a. Set the video resolution. Go to the **Tools** menu, **Video**. Select **800 x 600 256 colors**.

  b. Go to the **Tools** menu, select **Calibrate**.

  Touchware Control Panel:

  a. Go to the **Calibrate** tab and press **Calibrate**.

Calibration Procedure

The calibration program looks at where your finger is when you lift it off the screen, not where you touch it. Therefore, calibrate the screen as follows:

1. Touch the screen on the calibration target.
2. Keep your finger on the screen and slide it to the center of the target.
3. Hold your finger firmly on the target for approximately two seconds until directed to next target, then lift it off quickly.

4. Verify that the calibration was set accurately before making a service call. Perform the calibration again if necessary.

   - If cursor is not stable, or false touches are suspected, run the Noise Check Utility from the Touchware Control Panel (Windows) or from the Microcal (DOS) program. Choose the recommended frequency (the one with the lowest noise level). This should also be done if the touch screen is still not calibrated after one attempt to recalibrate it.

     Microcal:

     a. Set the video resolution. Go to the **Tools** menu, **Video**. Select **800 x 600 256 colors**.

     b. Go to the **Tools** menu, select **Noise Check**.

     c. Follow the instruction prompts. Choose the frequency with the lowest noise level.

     Touchware Control Panel:

     a. Go to the **Cursor** tab and press **Stabilize Cursor**.

     b. Choose the recommended frequency.

   - The Edge Adjust should be turned off if using Windows.

     Touchware Control Panel:

     a. Go to the **Cursor** tab. **Edge Adjustment** should be turned off.

   - Application software can possibly generate a dialog box from the Touch Driver, with the message that the touch screen needs to be recalibrated. If the screen appears to be working normally, then this message can be ignored. There will be a check box labeled `Do not show this message again`. Make sure this box is checked.

Summary

If there is a touch screen calibration issue during or after installation, take the following actions in the order listed:

1. Recalibrate.
2. If recalibration is unsuccessful after two attempts, then run the Noise check to change the frequency.
3. If you are still unable to calibrate, change the touch screen glass.
4. The final step is to replace the Processor Board. If this corrects the problem, then the old glass is probably OK to reuse.

Out-of-Box Failures

The RSG-Atlanta Customer Satisfaction Hotline will replace out-of-box failed hard disks with identical, preloaded drives. Once a system is successfully installed, all disk contents are the responsibility of the customer. The customer is responsible for restoring operating system software and/or customer-specific data onto replacement disks sent to repair a failed or damaged disk in the field. NCR provides recovery tools for the operating system and platform software.

Powering Down the Terminal

To power down the terminal, depress and hold the power off button for 4-5 seconds.

Note: If the unit is powered on and you pull the plug from the power source and then plug it back in, the unit comes back on. If the unit is powered off and you unplug it from its power source, then plug it back in, the unit is still powered off.

Chapter 3: BIOS Setup

Introduction

This chapter describes how to configure the BIOS CMOS options. Following this *Introduction*, there are sections specific to Pentium terminals and sections specific to Pentium III/Celeron terminals.

Note: An external alphanumeric keyboard is not required to run the BIOS CMOS Setup Utility, but a keyboard makes the setup easier.

Note: The Setup Menus in this chapter reference NCR 7451/7460 BIOS Version 1.0.1.0.

Entering Setup Using a Keyboard

1. Apply power to the terminal.
2. Press the F2 key when the message at the bottom of the screen prompts you to do so.

Note: Setup can also be entered from the Boot Menu that is displayed when you press **ESC** during POST.

How to Select Menu Options

The following keyboard controls are used to select the various menu options and to make changes to their values.

- Use the arrow keys to select (highlight) options and menu screens.
- Use the + and - (or F5 and F6) keys to change field values.
- To view help information on the possible selections for the highlighted item, press F1.
- To save the changes, move the cursor to the *Exit Menu*, select either *Save Changes & Exit* or *Save Changes*, and press Enter.

Note: If you are not using an external keyboard, you can touch the menu controls at the bottom of the screen. If you encounter difficulty doing this, recalibrate the screen.

Restoring Factory Settings

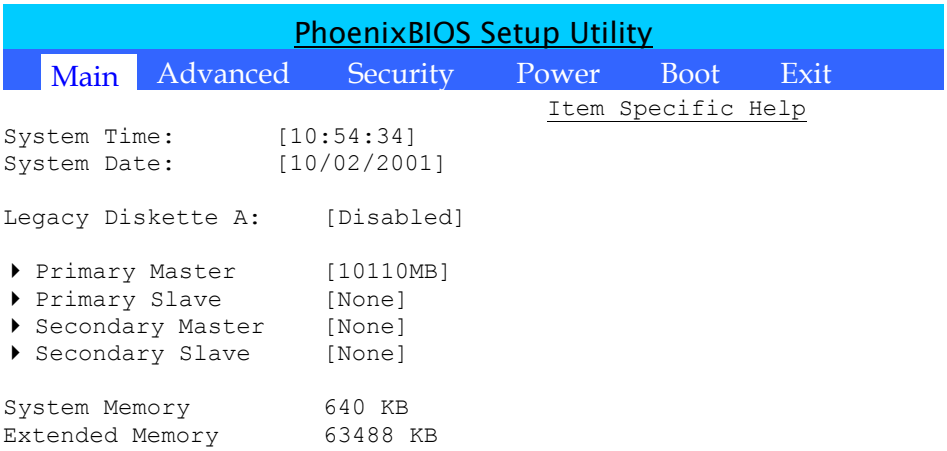
To reset all values to their default settings for the *current screen*, press F9. The terminal will automatically load BIOS default CMOS values for boot up.

To reset *all* BIOS settings to their default settings go to the *Exit* menu, press F9, select either *Save Changes & Exit* or *Save Changes*, and press Enter.

See the BIOS Default Settings section later in this chapter for the pre-installed Setup defaults.

Setup Menus

Main Menu



System Time and Date

The BIOS can only set the year up to 2030; however, the hardware continues beyond 2030.

To set the date and time, perform the following steps:

1. Move your cursor to the *System Time* option, enter the desired value, and press Tab or Enter to continue with the next field.
2. Enter the desired date in the *System Date* fields the same way as the last step.
3. Move the cursor to the *Exit Menu*, select *Save Changes & Exit* or *Save Changes*, and press Enter.

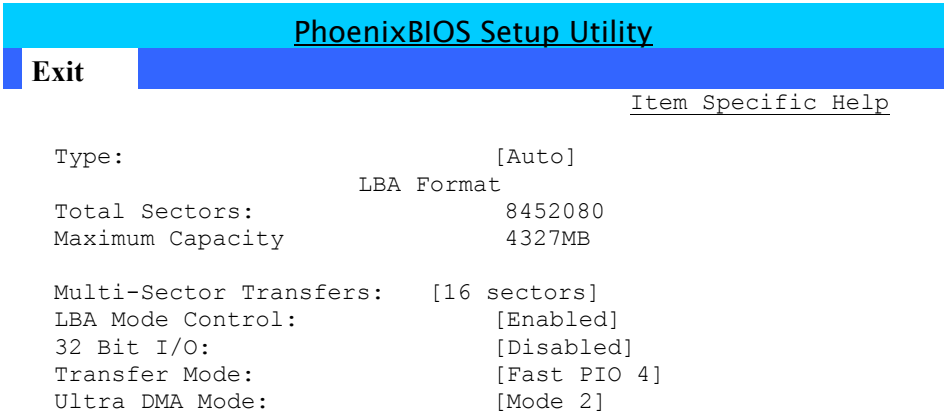
Legacy Diskette

The terminal does not have a flex disk drive. Therefore this option is unused, even though Setup defaults to *1.25 MB, 3 ½"*.

Primary Master

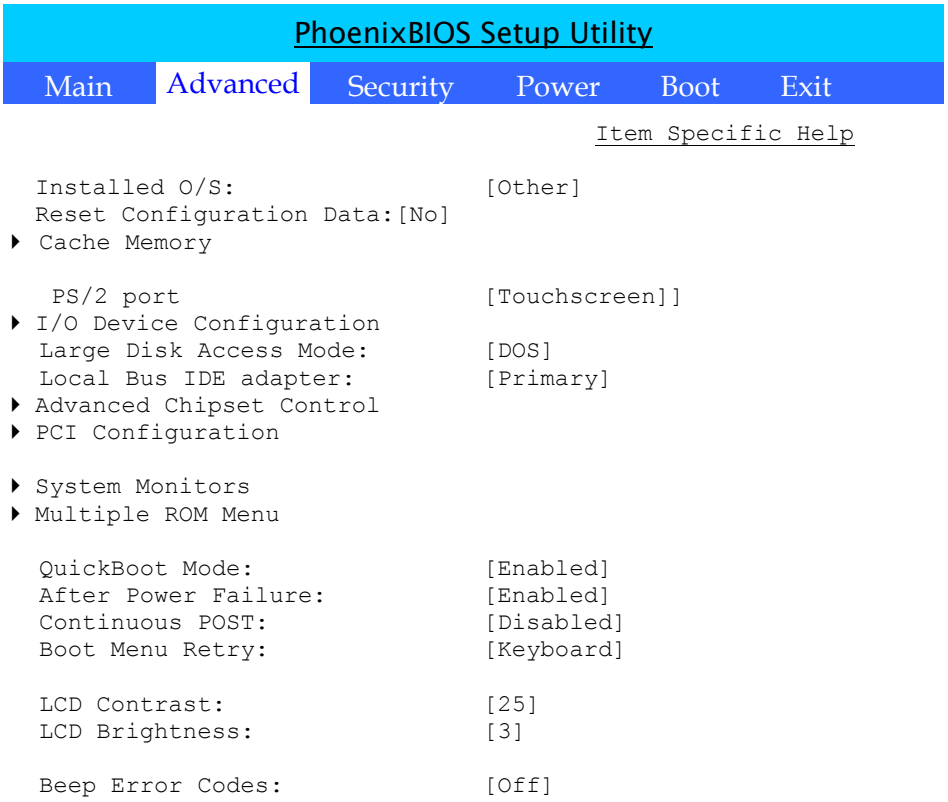
After installing a new hard drive, the system should automatically detect the drive. If this is not done automatically and you need to configure the IDE Adapter. Perform the following steps:

1. Move the cursor to the *Primary Master* option and press Enter. A sub-menu appears for the IDE drive.



2. Use the F5 and F6 keys to select the *Type* of hard disk. If Auto is selected, the fields are automatically filled, based upon the installed drive.
3. Move the cursor to the *Exit* menu, select *Save Changes & Exit* or *Save Changes*, and press Enter.

Advanced Menu



Installed OS

The options on this menu are used to select operating system.

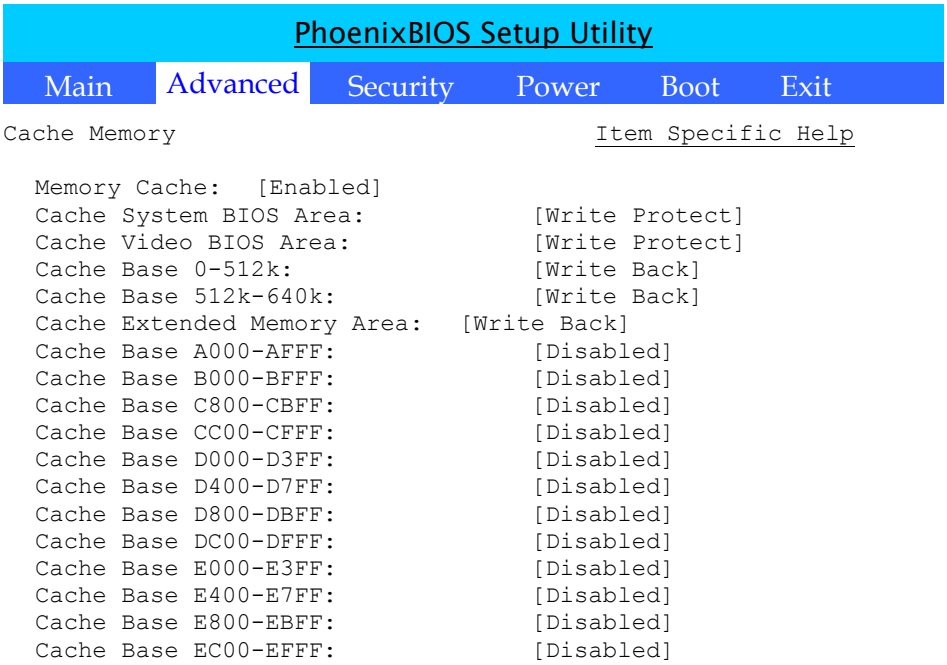
1. Move the cursor to the *Installed OS* option and press Enter.
2. Select the appropriate operating system from the drop-down menu.

Note: An incorrect setting can cause some operating systems to display unexpected behavior.

Reset Configuration Data

1. Move the cursor to *Reset Configuration Data* and press Enter.
2. Select 'Yes' if you want to clear the Extended System Configuration Data (ESCD) area.

Cache Memory



Memory Cache

Use this option to set the state of the memory cache.

1. Move the cursor to the option *Memory Cache* and press Enter.
2. Select the desired setting from the drop down menu.

Cache System BIOS area

This option controls caching of system BIOS area.

1. Move the cursor to *Cache System BIOS Area* and press Enter.
2. Select the desired setting from the drop down menu.

Cache Video BIOS area

This option controls caching of the video BIOS area.

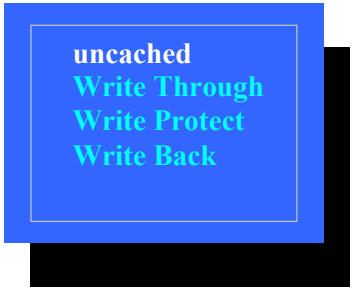
1. Move the cursor to *Cache Video BIOS Area* and press Enter.

2. Select the desired setting from the drop down menu.

Cache Base 0-512k/512K-640K

These options control caching of the base memory areas.

1. Move the cursor to the appropriate cache option and press Enter.
2. Select the desired setting from the drop-down menu.

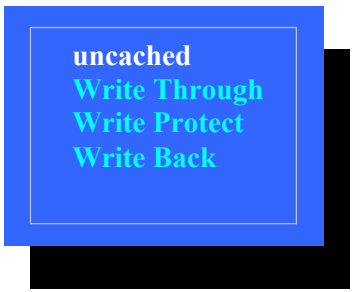


- **Uncached –** Memory is not cached
- **Write Through –** Writes are cached and sent to the main memory at once
- **Write Protect –** Writes are ignored
- **Write Back –** Writes are cached, but not sent to main memory until necessary

Cache Base Extended Memory Area

This option controls caching of system memory above one megabyte.

1. Move the cursor to *Cache Base Extended Memory Area* and press Enter.
2. Select the desired setting from the drop down menu.



Cache Base A000-AFFF through Cache Base EC00-EFFF

These options control caching of specific memory areas.

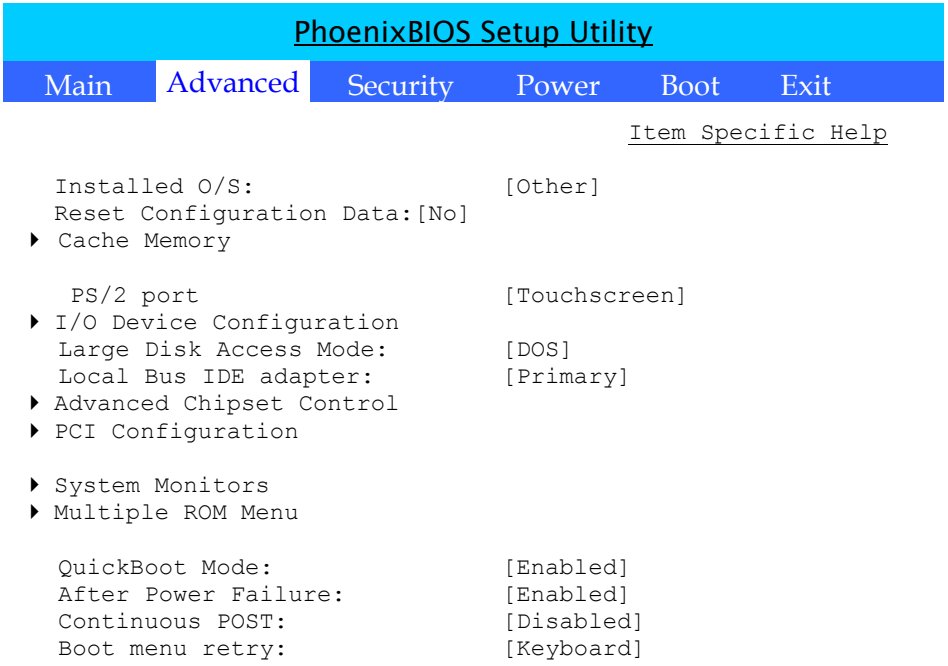
1. Move the cursor to the desired *Cache* area and press Enter.
2. Select the desired setting from the drop down menu.

- **Disabled -** This block is not cached
- **USWC Caching –** Uncached Speculative Write Combined
- **Write Through** - Writes are cached and sent to main memory at once
- **Write Protect –** Writes are ignored
- **Write Back –** Writes are cached, but not sent to the main memory until necessary.

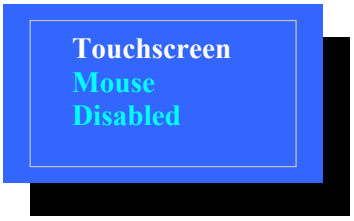
PS/2 port

Use this option to select whether AUX device input is from a touchscreen or a PS/2 mouse.

1. Move the cursor to the *PS/2 port* option and press Enter.

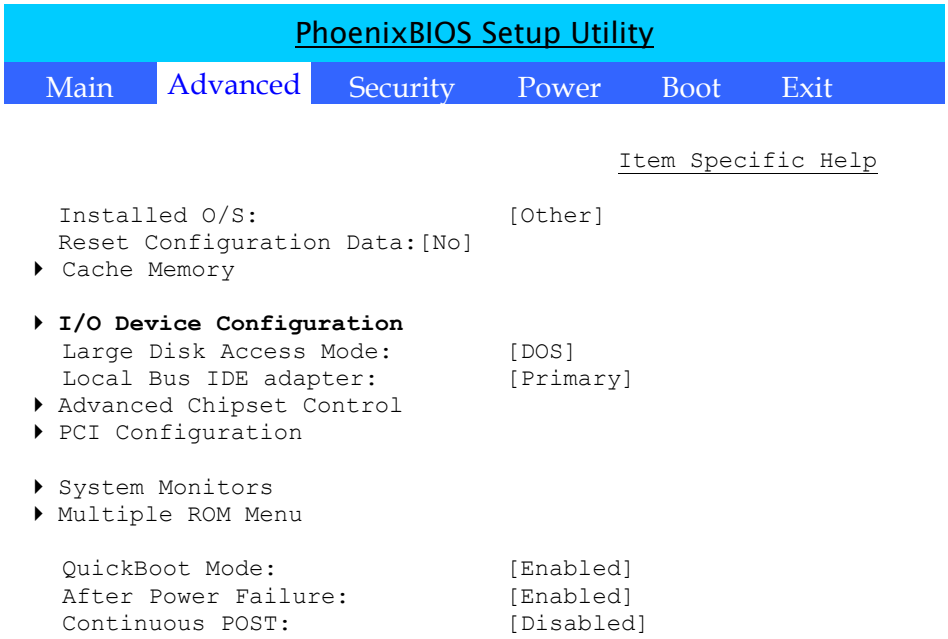


2. Select the desired setting from the drop-down menu.



I/O Device Configuration

The I/O Device Configuration option is used to configure peripherals. Move the cursor to *I/O Device Configuration* on the Advanced Menu and press Enter.



The following submenu displays.

```
   I/O Device Configuration                    Item Specific Help

   Serial Port A:                 [Enabled]
      Base I/O Address:             [3F8]
      Interrupt:                    [IRQ 4]
   Serial Port B:                   [Enabled]
      Base I/O Address:             [2F8]
      Interrupt:                    [IRQ 3]
      Powered Port:                 [Auto]

   LPT 1:                           [Enabled]
      Mode:                         [ECP]
      Base I/O Address:             [378]
      Interrupt:                    [IRQ7]
      DMA Channel:                  [DMA1]
      Fdc On Lpt:                   [Auto]

   Floppy disk Controller:          [Disabled]

Serial Port C:                      [Enabled]
      Base I/O Address:             [3E8]
      Interrupt:                    [IRQ 10]
      Powered Port:                 [Auto]
Serial Port D:                      [Enabled]
      Base I/O Address:             [2E8]
      Interrupt:                    [IRQ 11]
      Powered Port:                 [Auto]

   LPT 2:                           [Enabled]
      Mode:                         [ECP]
      Base I/O Address:             [278]
      Interrupt                     [IRQ5]
      DMA channel                   [DMA 3]
Disk-On-Chip Address                [Disabled]
MSR Address                         [DE00-DFFF]
```

Serial Port x

These options configure the serial ports (A/B/C/D).

1. Move the cursor to *Serial port x* and press Enter.
2. Select the desired setting from the drop-down menu.

- **Disabled –** No configuration
- **Enabled –** User configuration
- **Auto –** BIOS or OS chooses configuration
- *OS Controlled* - displayed when controlled by OS

Base I/O address (Serial Port A/B)

Use this option to set the *base I/O address* for serial ports (A/B).

1. Move the cursor to *Base I/O address* and press Enter.
2. Select the desired setting from the drop-down menu.

Interrupt (Serial Port A)

Use this option to set the *Interrupt* for serial port A.

1. Move the cursor to *Interrupt* and press Enter.
2. Select the desired setting from the drop-down menu.

Interrupt (Serial Port B)

This option is used to set the *Interrupt* for serial port B.

1. Move the cursor to *Interrupt* and press Enter.
2. Select the desired setting from the drop-down menu.

Powered Port (Serial Port B)

This option is used to set the mode of the serial power pin on the COM port when +12v is present on pin 9.

1. Move the cursor to *Powered Port* and press Enter.
2. Select the desired setting from the drop-down menu.

- **Auto –** Detect special cable and turn power on if present
- **On –** Set the power on at all times
- **Off –** Always leaves power off

LPT x

This option is used to configure Parallel Port (1/2).

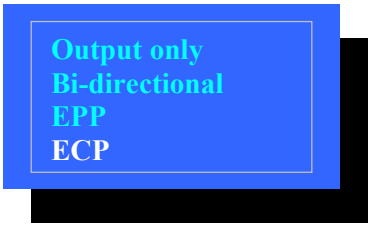
1. Move the cursor to *LPT x* and press Enter.
2. Select the desired setting from the drop-down menu.

- **Disabled –** No configuration
- **Enabled –** User configuration
- **Auto –** BIOS or OS chooses configuration
- *OS Controlled* - displayed when controlled by OS

Mode (LPT 1)

Use this option to set the mode for LPT 1.

1. Move the cursor to *Mode* and press Enter.
2. Select the desired setting from the drop-down menu.



Base I/O address (LPT 1)

This option is used to set the base I/O address for LPT 1.

1. Move the cursor to *Base I/O address* and press Enter.
2. Select the desired setting from the drop-down menu.

Interrupt (LPT 1)

Use this option to set the Interrupt for LPT 1.

1. Move the cursor to *Interrupt* and press Enter.
2. Select the desired setting from the drop-down menu.

DMA Channel (LPT 1)

Use this option to set the DMA Channel for LPT 1.

1. Move the cursor to *DMA Channel* and press Enter.
2. Select the desired setting from the drop-down menu.

Fdc on LPT

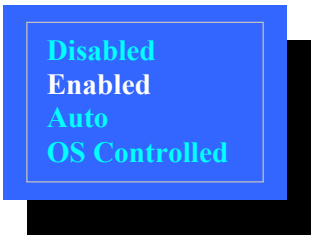
Use this option to enable the primary floppy on LPT 1.

1. Move the cursor to *Fdc on LPT* and press Enter.
2. Select the desired setting from the drop-down menu.

Floppy disk controller

This option is used to configure the floppy disk controller.

1. Move the cursor to *Floppy disk controller* and press Enter.
2. Select the desired setting from the drop-down menu.



Base I/O address (Serial Ports C/D

Use these options to set the base I/O address for serial ports C/D.

1. Move the cursor to *Base I/O address* and press Enter.
2. Select the desired setting from the drop-down menu.

Interrupt (Serial Port C)

This option is used to set the *Interrupt* for serial port C.

1. Move the cursor to *Interrupt* and press Enter.
2. Select the desired setting from the drop-down menu.

Powered Port (Serial Port C/D)

This option is used to set the mode of the serial power pin on the COM port when +12v is present on pin 9.

1. Move the cursor to *Powered Port* and press Enter.
2. Select the desired setting from the drop-down menu.

- **Auto –** Detect special cable and turn power on if present
- **On –** Set the power on at all times
- **Off –** Always leaves power off

Interrupt (Serial Port D)

Use this option to set the Interrupt for serial port D.

1. Move the cursor to *Interrupt* and press Enter.
2. Select the desired setting from the drop-down menu.

Mode (LPT 2)
Use this option to set the mode for LPT 2.

1. Move the cursor to *Mode* and press Enter.
2. Select the desired setting from the drop-down menu.

Base I/O address (LPT 2)
This is used to set the base I/O address for LPT 2.

1. Move the cursor to *Base I/O address* and press Enter.
2. Select the desired setting from the drop-down menu.

Interrupt (LPT 2)
Use this option to set the *Interrupt* for LPT 2.

1. Move the cursor to the *Interrupt* option and press Enter.
2. Select the desired setting from the drop-down menu.

DMA channel (LPT 2)

This option is used to set the DMA channel for LPT 2.

1. Move the cursor to *DMA channel* and press Enter.
2. Select the desired setting from the drop-down menu.

Disk-On-Chip-Address

Use this option to select the memory address range used for the Disk-On-Chip.

1. Move the cursor to *Disk-On-Chip address* and press Enter.
2. Select the desired setting from the drop-down menu.

MSR Address

This option is used to select the memory address range used for the Magnetic Stripe Reader.

1. Move the cursor to *MSR Address* and press Enter.
2. Select the desired setting from the drop-down menu.

Large Disk Access Mode

Use this option to set the Large Disk Access Mode.

Note: UNIX, Novell NetWare, or other operating systems, select "Other." If you are installing new software and the drive fails, change the selection and try again.

1. Move the cursor to *Large Disk Access Mode* and press Enter.
2. Select the desired setting from the drop-down menu.

Local Bus IDE adapter

This option enables the integrated Local Bus IDE adapter.

1. Move the cursor to *Local Bus IDE adapter* and press Enter.
2. Select the desired setting from the drop-down menu.

Advanced Chipset Control

Move the cursor to *Advanced Chipset Control* and press Enter to access the submenu.

Video boot type

Use this option to enable the onboard video controller as the boot display device.

1. Move the cursor to *Video boot type* and press Enter.
2. Select the desired setting from the drop-down menu.

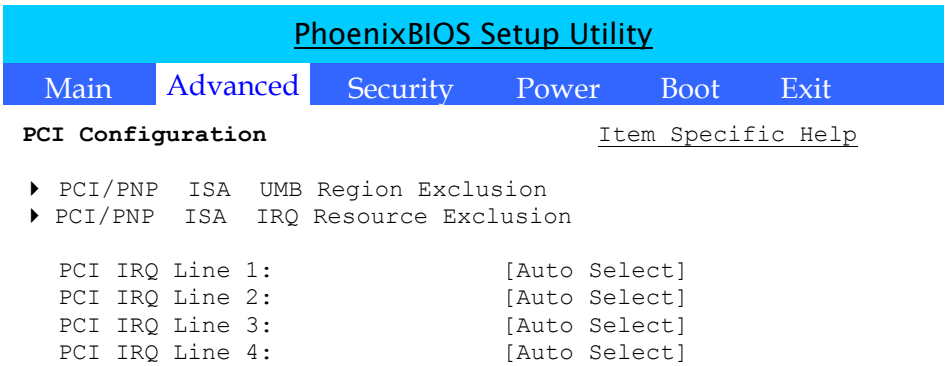
Extended memory gap

If enabled, the Extended memory gap turns system RAM off to free address space for use with an optional card. A 1 MB extended memory gap, starting at 15 MB, is created in system RAM.

1. Move the cursor to *Extended memory gap* and press Enter.
2. Select the desired setting from the drop-down menu.

PCI Configuration

Move the cursor to *PCI Configuration* and press Enter to access the submenu.



PCI/PNP ISA UMB Region Exclusion

This option reserves specific upper memory blocks for use by legacy ISA devices.

1. Move the cursor to *PCI/PNP ISA UMB Region Exclusion* and press Enter.
2. Select the appropriate memory block from the list**, C800-CBFF** through **DC00-DFFF**, and press Enter

3. Select the desired setting from the drop-down menu. Select *Reserved* to reserve a specified block of upper memory for use by legacy ISA devices.

PCI/PNP ISA IRQ Resource Exclusion

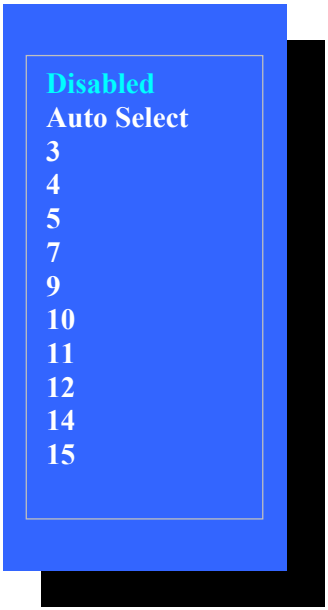
This option reserves specific IRQs for use by legacy ISA devices.

1. Move the cursor to *PCI/PNP ISA IRQ Resource Exclusion* and press Enter.
2. Select the desired IRQ from the list**, IRQ 3** through **IRQ 15**, and press Enter.
3. Select the desired setting from the drop-down menu. Select *Reserved* to reserve a specified IRQ for use by legacy ISA devices.

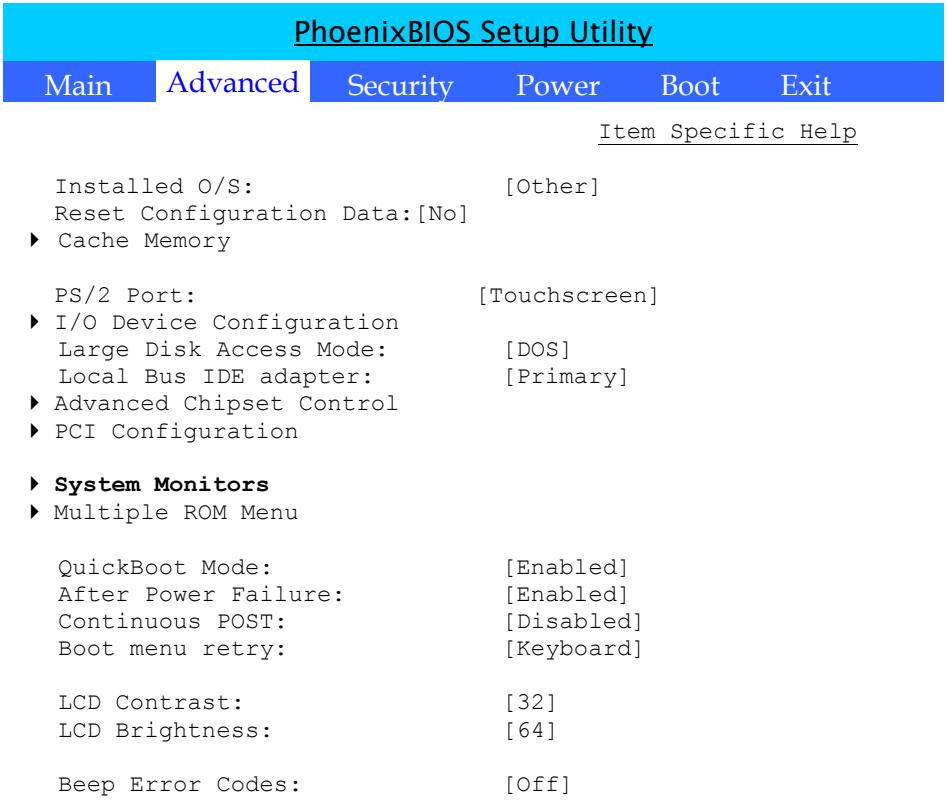
PCI IRQ Line 1 through 4

PCI devices can use hardware interrupts called IRQs. A PCI device cannot use IRQs already in use by ISA or EISA devices. Use *Auto Select* only if no ISA or EISA legacy cards are installed.

1. Move the cursor to the appropriate *PCI IRQ Line 1 through 4* option and press Enter.
2. Select the desired setting from the drop-down menu.



System Monitors

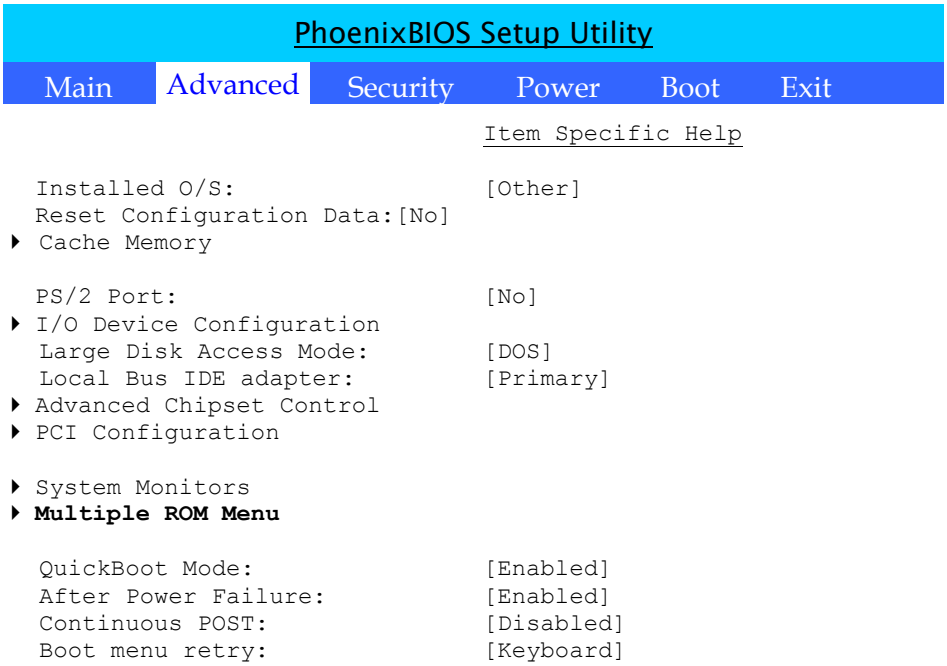


1. Move the cursor to the *System Monitors* option.
2. Press Enter to monitor voltage, temperatures etc.

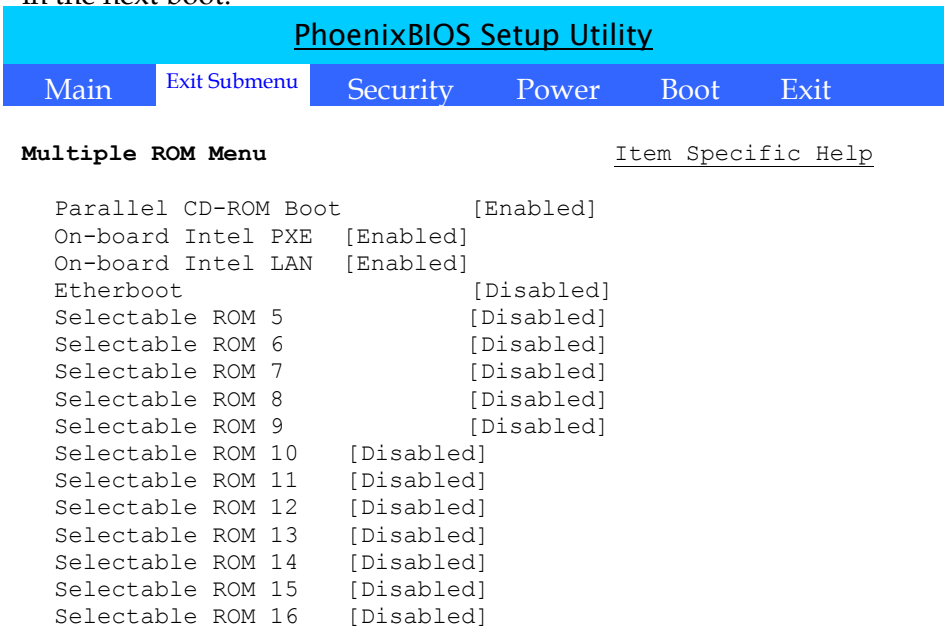
   Note: Options on this menu can not be modified.

Multiple ROM Menu

Move the cursor to *Multiple ROM Menu* and press Enter.



The options on this submenu are used to load/unload specific ROMs in the next boot.



1. Move the cursor to the *Selectable ROM* x option and press Enter.

2. Select the desired setting from the drop-down menu.

- **Disabled** – do not load ROM
- **Enabled** – load ROM in next boot

Note: Etherboot is included for a special application. This selection is not generally supported.

QuickBoot Mode

Enabling Quickboot Mode permits the system to skip certain tests while booting. This decreases the time needed to boot the system.

1. Move the cursor to *QuickBoot Mode* and press Enter.
2. Select the desired setting from the drop-down menu.

After Power Failure

This option sets the mode of operation if an AC power loss occurs.

1. Move the cursor to *After Power Failure* and press Enter.
2. Select the desired setting from the drop-down menu.

- **Enabled -** Restores the previous power state before the loss occurred.
- **Disabled –** Keeps the power off unitl the power button is pressed.

Continuous POST

This option enables POST to repeat in a loop until cancelled by pressing any key.

1. Move the cursor to *Continuous POST* and press Enter.
2. Select the desired setting from the drop-down menu.

Boot menu retry

Use this option to configure boot menu behavior.

1. Move the cursor to *Boot menu retry* and press Enter.
2. Select the desired setting from the drop-down menu.

- **Keyboard –** User must press a key before POST will retry booting from the devices in the boot menu.
- **Auto –** POST will loop continuously through the boot menu devices without user input.

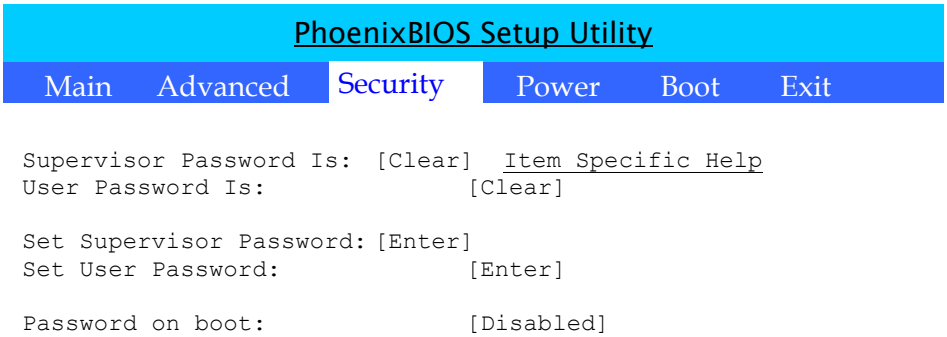
LCD contrast and LCD Brightness (Advanced Menu)

To set the contrast and/or brightness, move the cursor to the appropriate line item and press Enter.

Beep Error Codes (Advanced Menu)

The *Beep Error Codes* option enables/disables beep codes on error(s). Move the cursor to *Beep Error Codes*, press Enter, and select On or Off.

Security Menu Options



Set Supervisor/User Password

The Supervisor Password controls access to the setup utility. The User Password controls access to the system at boot. `[Set]` indicates that a password is present. `[Clear]` indicates that a password is not present. To enter a password, follow these steps:

Note: The User Password cannot be set until after the Supervisor Password is set.

1. Move the cursor to the *Set Supervisor Password* or *Set User Password* option and press Enter.
2. Key-in the password and press Enter.
3. Confirm the password by keying it in again and pressing Enter. A Setup Notice confirms the changes have been saved.
4. Press Enter to return to the Security Menu Options screen.

Note: If the passwords are not known, the CMOS must be cleared as described in *Clearing the Passwords*.

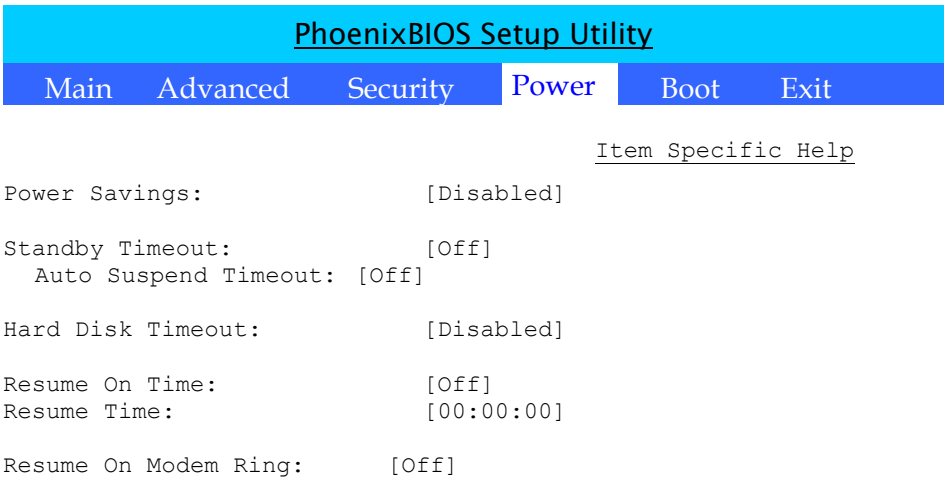
Password on Boot

This option enables/disables the password entry on boot.

Note: User Password must also be set.

1. Move the cursor to *Password on Boot* and press Enter.
2. Select the desired setting from the drop-down menu.

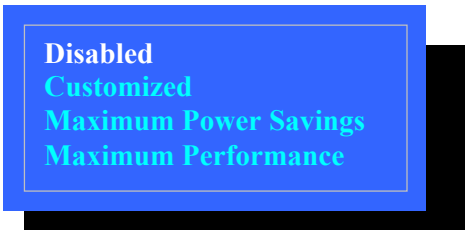
Power Menu Options



Power Savings

Use this option to select the power management mode.

1. Move the cursor to *Power Savings* and press Enter.
2. Select the desired setting from the drop-down menu.



- **Disabled** – power Management is turned off
- **Customize** – user defined settings
- **Maximum Power Savings** – conserves the greatest amount of system power
- **Maximum Performance** – conserves power but permits greatest system performance

Standby Timeout (Customized Mode)

Standby Timeout sets the amount of time the system needs to be in Idle Mode before entering Standby Mode. Standby Mode turns off various devices in the system, including the screen, until you start using the computer again.

1. Move the cursor to *Standby Timeout* and press Enter.
2. Select the desired setting from the drop-down menu.

Auto Suspend Timeout (Customized Mode)

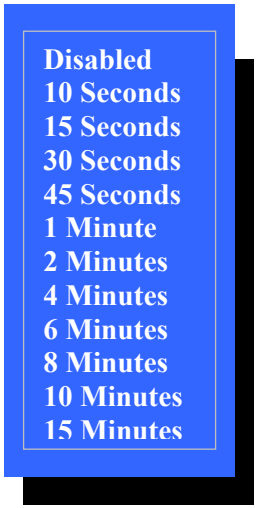
Auto Suspend Timeout identifies the amount of time the system needs to be in Standby Mode before entering Suspend Mode.

1. Move the cursor to *Auto Suspend Timeout* and press Enter.
2. Select the desired setting from the drop-down menu.

Hard Disk Timeout (Customized Mode)

Hard Disk Timeout sets the amount of time the hard disk needs to be inactive before it is turned off.

1. Move the cursor to *Hard Disk Timeout* and press Enter.
2. Select the desired setting from the drop-down menu.



Resume On Time

This option is used to enable the system to wake up at a specific time.

1. Move the cursor to *Resume On Time* and press Enter.
2. Select the desired setting from the drop-down menu.

Resume Time

Use this option to specify the time when the system is to wake up.

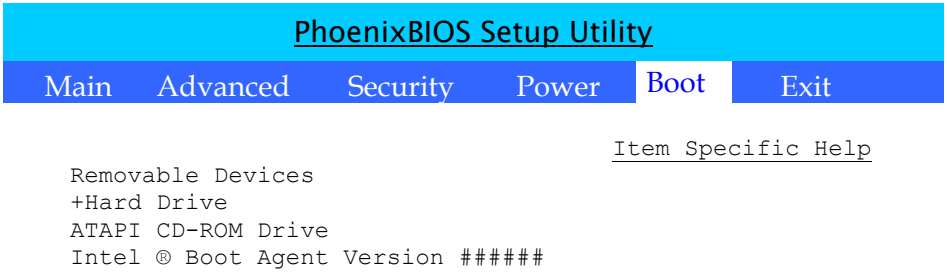
1. Move the cursor to *Resume On Time* .
2. To specify time, use TAB, SHIFT-TAB or ENTER to select fields [00:00:00].

Resume On Modem Ring

This option enables the system to wake up when an incoming call is detected on your modem.

1. Move the cursor to *Resume On Modem Ring* and press Enter.
2. Select the desired setting from the drop-down menu.

Boot Menu Options

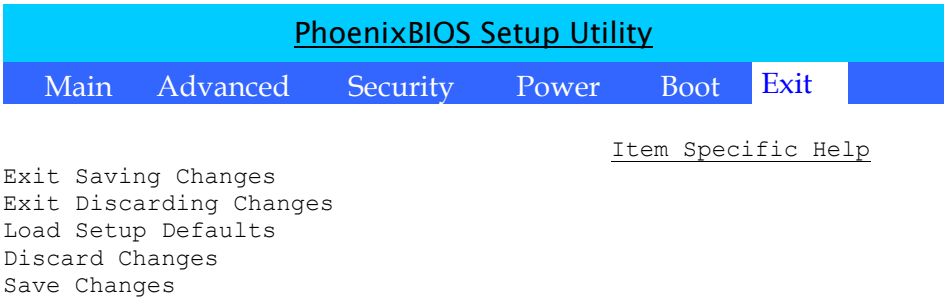


System Boot Sequence

The System Boot Sequence is a list of devices the terminal uses to boot the system. To change the sequence of the devices:

1. <ENTER> Expands or collapses devices using a + or _.
2. <Ctrl + ENTER> Expands all.
3. <Shift + 1> Enables or disables a device.
4. <+> and <-> moves the device up and down.

Exit Menu Options



Exit Saving Changes

Exit after writing all changed option values to CMOS memory.

Exit Discarding Changes

Exit without saving changed option values to CMOS memory.

Load Setup Defaults

Load default value for all BIOS options.

Discard Changes

Load previous values from CMOS memory for all options.

Save Changes

Write all option values to CMOS memory.

BIOS Default CMOS Values

The following are the BIOS default CMOS values for the terminal.

Note: When installing a new BIOS from the CD, the processor board type is automatically detected and the correct BIOS is automatically installed

Main Values

System Time	(variable)
System Date	(variable)
Legacy Diskette A:	Disabled

IDE Primary Master	
Type	[Auto]
Cylinders	8944
Heads	15
Sectors/Track	63
Maximum Capacity	4327 MB
Multi-Sector Transfers	16 Sectors
LBA Mode Control	Enabled
32 Bit I/O	Disabled
Transfer Mode	Fast PIO 4
Ultra DMA Mode	Mode 2

IDE Primary Slave	
Type	None

IDE Secondary Master	
Type	None

IDE Secondary Slave	
Type	None

Memory Cache	Enabled
Cache System BIOS area	Enabled
Cache Video BIOS area	Disabled

System Memory	640 kB
Extended Memory	31744 kB

Power Savings	Disabled
Standby Timeout	Off
Auto Suspend Timeout	Off
Fixed Disk	Disabled
Video	Disabled
IDE Drive 0 Monitoring	Disabled
IDE Drive 1 Monitoring	Disabled
IDE Drive 2 Monitoring	Disabled
IDE Drive 3 Monitoring	Disabled
PCI Bus Monitoring	Disabled

Boot sequence	
1. LANDesk® Service Agent II	
2. Hard Drive	
Continuous POST	Disabled

Advanced ValuesI/O Device Configuration

Local Bus IDE adapter	Primary
Serial port A	Auto
Serial port B	Auto
Mode	Normal
Parallel port	Auto
Mode	Bi-directional
Floppy disk controller	Disabled
Disk-On-Chip Address	Disabled
MSR Address	DE00-DFFF
Plug and Play	No
Reset Configuration Data	Yes
PS/2 Mouse	Auto
Large Disk Access Mode	DOS
Secured Setup Configurations	No

PCI Configuration

ISA Graphics Device Installed	No
PCI/PNP ISA UMB Region Exclusion	Available (all)

I/O Addresses

The following I/O Address Map applies to the 7460 workstation.

Address (hex)	Size	Description (Default/Primary Resource)	Description (Alternate Configurable Resource)
0	16	DMA Controller	
20	8	Interrupt Controller	
40	4	System Timer	
60	8	Keyboard Controller	
70	8	Real Time Clock	
80	16	DMA Page Controller	
90	8	System Control Port	
98	8	Reserved	
A0	8	Slave Interrupt Controller	
A8	24	Reserved	
C0	32	Slave DMA Controller	
F0	16	Math Co-Processor	
1F0	8	IDE Controller, Channel 1	
220	8		COM C or COM D
228	8		COM C or COM D
278	8	LPT2	LPT1
2E8	8	COM D	COM A or COM B
2F8	8	COM B	COM A or COM B
378	8	LPT1	LPT2
3BC	8		LPT1
3C0	8	Video	

Address (hex)	Size	Description (Default/Primary Resource)	Description (Alternate Configurable Resource)
3E8	8	COM C	COM A or COM B
3F0	8	Floppy Drive	
3F8	8	COM A	
1800	8	IDE	
1810	8	SM Bus	
1820	8	USB	
1840	8	Audio	
1C00	8	Audio	
2000	4096	PCI-to-PCI Bridge	

Interrupt Levels

The following Interrupt Levels apply to the 7460 workstation.

IRQ	Description
0	System Timer
1	Keyboard
2	
3	Communications Port (COM 2)
4	Communications Port (COM 1)
5	
6	Floppy Drive
7	
8	Real Time Clock
9	Video/Audio/LAN (shared)
10	Communications Port (COM 3)
11	Communications Port (COM 4)
12	USB
13	Math Co-Processor
14	IDE Hard Disk
15	Reserved

Memory Map

The following table details the memory map for the Pentium III/Celeron processor. Parts of this area may be used by future versions of the BIOS to add increased functionality.

Address Range	Size	Description
FFFFFFFF-FFF80000	512KB	BIOS ROM
FFF80000-FFF81FFF	8KB	BIOS ESCD
100000-FFFFFFF	255MB	Extended Memory (1MB to 255MB)
E8000-FFFFF	96KB	BIOS run-time
E4000-E7FFF	16KB	BIOS DMI
E0000-E3FFF	16KB	Lan PXE ROM (if MSR and/or DOC enabled)
DC000-DFFFF	16KB	MSR and/or DOC if either is enabled (DOC at DC000 or MSR at DE000)
D8000-DBFFF	16KB	MSR and/or DOC if either is enabled (DOC at D8000 or MSR at DA000)
D4000-E0000	48KB	Lan PXE ROM (uses D8000-DFFFF only if no MSR/DOC)
D2000-D3FFF	8KB	Available HI DOS memory
D0000-D1FFF	8KB	Micro-Solutions Backpack CD ROM (if enabled)
CC000-CFFFF	16KB	Available HI DOS memory
C0000-CBFFF	48KB	Onboard video BIOS
A0000-BFFFF	128 kB	Reserved for video memory
9FC00-9FFFF	1KB	Extended BIOS data
80000-9FBFF	127KB	Extended memory
00000-7FFFF	512KB	Conventional memory
DA000-DBFFF DE000-DFFFF	8kB	NCR Trigantor MSR (optional)
D8000-D9FFF DC000-DDFFF	8kB	Flash Disk (optional)

Chapter 4: Operating System Recovery

Introduction

This chapter discusses procedures how to recover the Operating System by using the parallel CD-ROM drive. The software is distributed on bootable CD-ROM media. The drivers that are necessary to run the CD-ROM are temporarily installed during boot.

Prerequisites

The following are required on the 7460 in order to perform a OS Recovery using a CD.

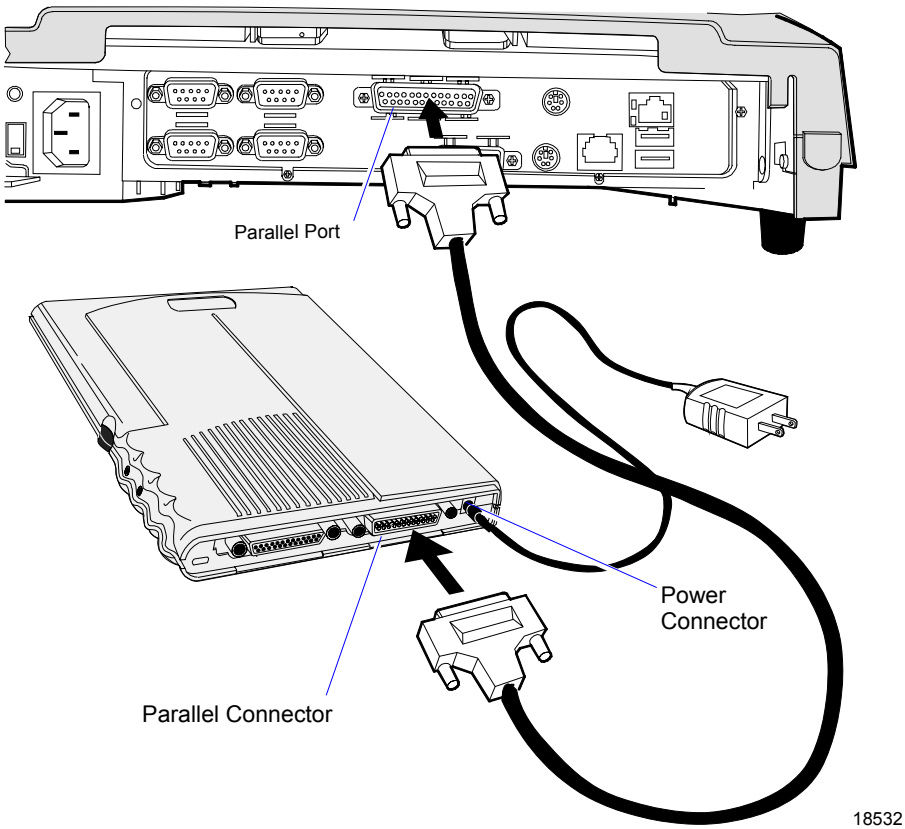
- Bootable CD-ROM drive (2336-K024)
- Keyboard

Caution: When performing an OS recovery from a larger source image (larger disk) to a smaller destination disk you must use a special procedure. See the section titled *OS Recovery from a Larger Disk Image*.

Updating Procedures

1. Connect the external CD-ROM (**2336-K024)** drive to the parallel port on the terminal.
2. Connect the opposite end of the CD-ROM cable power connector to the CD-ROM drive parallel connector.

   Note: The parallel port on the 7460 is the Remote Customer Display port. Therefore, if your terminal is configured with a Customer Display, you must temporarily disconnect it in order to use the CD-ROM drive.



3. Connect the DC Power Cable to the CD-ROM power connector and an AC outlet.
4. Insert the CD that contains the operating system image in the CD-ROM drive.

	Software CD LPINs				
7460 Model	**Win2000**	**WinNT**	**Win98**	**Win95**	**DOS**
7460-22xx	D370-0505-0100	D370-0496-0000	D370-0497-0100	D370-0498-0100	D370-0499-0100

5. Apply power to the terminal.
6. Press **F2** at the screen prompt to enter the Setup Utility.
7. In the **Advanced** menu, select **Multiple ROM Menu**.
8. Set the **Parallel CD-ROM Boot** to **Enabled**.
9. Exit Setup and Save Changes.

   As the terminal reboots, you should see a message during boot indicating that the CD-ROM has been recognized:

```
Micro Solutions BACKPACK CD-ROM v0.3
. . .
Booting from BACKPACK CD
Starting MS-DOS
```

10. Follow the DOS screen prompts. After each entry, you are asked to confirm your input. You can use *1* or *y* for **Yes**, *2* or *n* for **No**.
11. Enter whether or not you want to perform **Disk Verification**. (Answering **Yes** takes twice as long, but is recommended.)

    If **Yes** is selected:

    - The Ghost software verifies write operations and handles bad FAT clusters.
    - The Ghost error file (GHOST.ERR) is displayed before rebooting

If **No** is selected:

- The Ghost error file is displayed before rebooting only if Ghost aborts.

Caution: If the error file is displayed, the batch file pauses for user input before rebooting. You may use Ctrl-C to cancel out of the batch file if you want to see the error file again, but **nothing** should be done that writes to the hard disk before rebooting. GHOST.ERR is on the RAM disk and is lost on reboot.

12. Select which type of recovery you want to perform from the next menu (normally option #1).

    1) Redo entire disk with the first partition the same size.

    2) Redo the first OS partition.

    3) Redo the second OS partition.

    The Ghost software then begins the disk recovery from the CD. It displays a progress bar and gives you an estimate how long the process should take.

    When the recovery process is completed, the client hard disk is restored to its preinstalled condition, as originally received from the factory.

13. Enter Setup when the terminal reboots and reset the **Parallel CD-ROM Boot** to **Disabled**.

14. Exit Setup and Save Changes.

Completing the OS Installation (Win2000)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, it will perform a disk check and then continue with the Windows 2000 installation.
2. Enter the *User Name* and *Organization*.
3. Enter the *Computer Name* for the client.
4. Enter the *Administrator's Account Password* (optional)
5. When prompted, press *Finish* to reboot the client.
6. Login when prompted.
7. Run the MicroTouch screen calibration from the Desktop icon.

Windows 2000 Restriction:
After installing Windows 2000 the BackPack CD-ROM is not recognized as a boot device. It is recognized as a device on the system, but not a bootable device. When bootable media is inserted, errors such as *Operating System Not Found* are reported. To correct this condition set the BIOS to the Default Parameters. See the *Setup* chapter, *Exit Menu Options* section.

Completing the OS Installation (WinNT)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, it will perform a disk check and then continue with the Windows NT installation.
2. Enter the User Name and Organization.
3. Enter the Computer Name for the client.
4. Enter the Administrator's Account Password (optional)
5. When prompted, press Finish to reboot the client.
6. Log in when prompted.
7. Press Next at the Found New Hardware wizard.
8. Open the Control Panel and run the MicroTouch screen calibration.

Completing the OS Installation (Win98)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. When the terminal boots it enters the Windows setup routine.

   Note: When installing Win98 on terminals with early processor boards (7460-22xx) there are few differences in the procedure as follows:

   a) The terminal starts the *Add New Hardware Wizard*.

   b) For each device found, permit Windows to search for new drivers (take defaults).

   c) After each driver is installed you are asked to reboot. Answer **No**.

2. At the **User Information** screen, enter the *User* information. This can be done using a keyboard or you can use the touch screen.
3. Go into the Control Panel and set the terminal Date and Time.
4. In the Control Panel, run the MicroTouch screen calibration.

Completing the OS Installation (Win95)

The system automatically reboots when the image recovery is complete and starts the software installation. This installation also installs most of the additional software and drivers that are included in the disk image. Complete the installation as follows.

1. After the terminal reboots, press *Next* at the Windows Setup screen.
2. At the **User Information** screen, enter the *User* information. This can be done using a keyboard or you can use the touch screen keyboard. After entering the information, press **Enter** or touch **OK**.
3. Open the Control Panel and run the MicroTouch screen calibration.

Completing the OS Installation (DOS)

The system automatically reboots when the image recovery is complete and opens at the DOS C: prompt.

Gold Disk Contents

This section describes the contents of each of the Gold Disk Images, including all the additions and changes that was made on top of the generic operating system.

Important: For each operating system, NCR **strongly** recommends that the drivers placed in the `c:\install` directory be left there for the purposes of servicing and maintaining the system. If you are using the information in this section to build your own operating system image and not using NCR's provided OS Recovery image as a base image, then we recommend that all installed drivers be placed in a similar `c:\install` directory for support.

Microsoft Operating System License Agreements

When purchasing a workstation or kiosk preloaded with a Microsoft operating system, the application provider must follow certain license agreement guidelines. Listed below are some of the major points of Microsoft's "Embedded Software" agreement, which currently covers DOS, Win 3.11, Windows 95, Windows 98, Windows NT, and Windows 2000.

- The end user application should not allow the user (typically a cashier) to exit the application so that they may be able to browse the operating system desktop, explorer, or other Microsoft operating system user interface elements. This does not apply to servicing, upgrading, or diagnosing problems for the workstation by services or field engineers. This restriction is meant to ensure that the end user is only allowed to navigate within the confines of the end user's application under normal operating conditions.
- The NCR OS Recovery image can only be used to recover or update systems with licenses procured from NCR.

NCR 7460 Win 2000 Operating System Recovery Software (LPIN: D370-0505-0100)

- Microsoft Windows 2000 Professional installed
- Microsoft Internet Explorer 5.0 installed (version 5.00.3103.1000)
- Analog Devices SoundMax Audio drivers installed (version 5.12.1.2502)
- Intel(R) 82810 Video drivers installed (version 5.12.1.2687)
- Intel(R) 82559 Fast Ethernet LAN drivers installed (version 5.00.67.0000)
- Intel 810 Ultra ATA Storage drivers installed (version 6.03)
- MicroTouch TouchWare installed (version 5.6F Beta)
- Windows Installer installed (version 1.1)
- NCRSYSM driver installed (version 2.01.01.003)
- 10.Backpack CD-Rom drivers available (version 3.02)
- 11.Edgeport USB drivers available (version 1.14.9)

Windows 2000 Restriction:
After installing Windows 2000 the BackPack CD-ROM is not recognized as a boot device. It is recognized as a device on the system, but not a bootable device. When bootable media is inserted, errors such as *Operating System Not Found* are reported. To correct this condition set the BIOS to the Default Parameters. See the *Setup* chapter, *Exit Menu Options* section.

NCR 7460-NT Operating System Recovery Software (LPIN: D370-0496-0100)

- Microsoft Windows NT Workstation 4.0 installed
- Microsoft Internet Explorer 5.0 installed (version 5.00.2314.1003)
- Intel(R) 82810-DC100 Video driver installed (version 4.03.1381.2687)
- Intel(R) 82559 Fast Ethernet LAN driver installed (version 5.00.66.0000)
- MicroTouch TouchWare installed (version 5.6F Beta)
- Windows Installer installed (version 1.1)
- NCRSYSM driver installed (version 2.01.01.003)
- M-Systems DiskOnChip 2000 driver available (version 4.2)
- Backpack CD-Rom drivers available (version 2.04)
- 10.Intel 810 Ultra ATA Storage drivers available (version 6.03)
- 11.Edgeport USB drivers available (version 1.32)

NCR 7460-Win98 Operating System Recovery Software (LPIN: D370-0497-0100)

- Microsoft Windows 98 SE installed
- Microsoft Internet Explorer 5.0 installed (version 5.00.2614.3500)
- Analog Devices SoundMax Audio drivers installed (version 4.11.01.0611)
- Intel(R) 82810-DC100 Video drivers installed (version 4.12.01.2687)
- Intel(R) 82559 Fast Ethernet LAN drivers installed (version 5.00.67.0000)
- MicroTouch TouchWare installed (version 5.6F Beta)
- Windows Installer installed (version 1.1)
- NCRSYSM driver installed (version 2.01.01.003)
- Intel 810 Ultra ATA Storage drivers installed (version 6.03)
- 10.M-Systems DiskOnChip 2000 driver available (version 4.2)
- 11.Backpack CD-Rom drivers available (version 2.04)
- 12.Edgeport USB drivers available (version 1.14.9)

NCR 7460-Win95 Operating System Recovery Software (LPIN: D370-0498-0100)

- Microsoft Windows 95 OSR2 installed
- Microsoft Internet Explorer 5.0 installed (version 5.00.2314.1003IC)
- SMI Lynx EM Video driver installed (version 4.12.01.2687)
- Intel(R) 82559 Fast Ethernet LAN driver installed (version 5.00.66.0000)
- MicroTouch TouchWare installed (version 5.6F Beta)
- Windows Installer (Version 1.1) installed
- NCRSYSM driver installed (version 2.01.01.003)
- M-Systems DiskOnChip 2000 driver available (version 4.2)
- Backpack CD-Rom drivers available (version 2.04)
- 10.Edgeport USB drivers available (version 1.14.9)

NCR 7460 DOS Operating System Recovery Software (LPIN: D370-0499-0100)

- Microsoft DOS installed

OS Recovery from a Larger Disk Image

The following procedure should be used to restore an Operating System when the destination disk is smaller than the source image (i.e. OS Recovery was made on a 10 GB source disk, but is being recovered on a 4.3 GB drive).

1. Boot the system.

   You should see a message during boot indicating that the CD-ROM has been recognized:

   ```
   Micro Solutions BACKPACK CD-ROM v0.3
   . . .
   Booting from BACKPACK CD
   Starting MS-DOS
   ```

2. Follow the DOS screen prompts. After each entry, you are asked to confirm your input. You can use *1* or *y* for **Yes**, *2* or *n* for **No**.
3. Enter **No** at the **Disk verification** question.
4. Select which type of recovery you want to perform from the next menu (normally option #1).

   1) Redo entire disk with the first partition the same size.

   2) Redo the first OS partition.

   3) Redo the second OS partition.

5. At the *Press any key to continue* dialog box, press **[CTRL]-C** to abort the process. When asked `Terminate batch job?` Answer **Y**.
6. From the command prompt, change to drive Z, which is the location of the Ghost software (CD-ROM drive).
7. Run the Ghost command.

   ```
   Ghost.exe
   ```

8. Press **Enter**.
9. Select **Local** → **Disk** → **From Image** and press **Enter**.

10. The directory that Ghost is now looking in should be Z: (if not, switch to Z). Select the **File name to load image from** file (*nnnnnnn*.gho) and press **Enter**.
11. Select the **Local destination drive** and press **Enter**.
12. Set the size (2gb) of the 1st partition (which is FAT16). In order to do this you may need to clear the amount from the 2nd partition.
13. Set the size of the 2nd partition.

O/S	2nd Partition Format	2nd Partition Size
NT	NTFS	Fill the remaining drive space
Win2000	NTFS	Fill the remaining drive space
Win98	FAT32	Fill the remaining drive space
Win95	FAT32	Fill the remaining drive space
DOS	FAT16	2gb

14. Press **Enter**.
15. If you are recovering from Win9x, it is likely that the 2nd partition will be too small for FAT32. If so, a dialog is displayed
    `Converting partition from FAT32 to FAT, proceed?`
    Choose **Yes**.
16. At the next dialog box,
    `Proceed with disk load? Destination drive will be permanently overwritten,`
    Choose **Yes** to start the recovery process.

Chapter 5: BIOS Updating Procedures

Introduction

This chapter discusses procedures how to update the terminal BIOS by using the parallel CD-ROM drive. The software is distributed on bootable CD-ROM media. The drivers that are necessary to run the CD-ROM are temporarily installed during boot.

It is also possible to perform a BIOS update using a network connection. Refer to the *NCR FitClient Software User's Guide* for information about that procedure.

Crisis Recovery

In the event the BIOS becomes corrupt, such as the result of a power failure during the BIOS Update procedure, you can use the method discussed later in this chapter in the *BIOS Crisis Recovery* section to recover the BIOS.

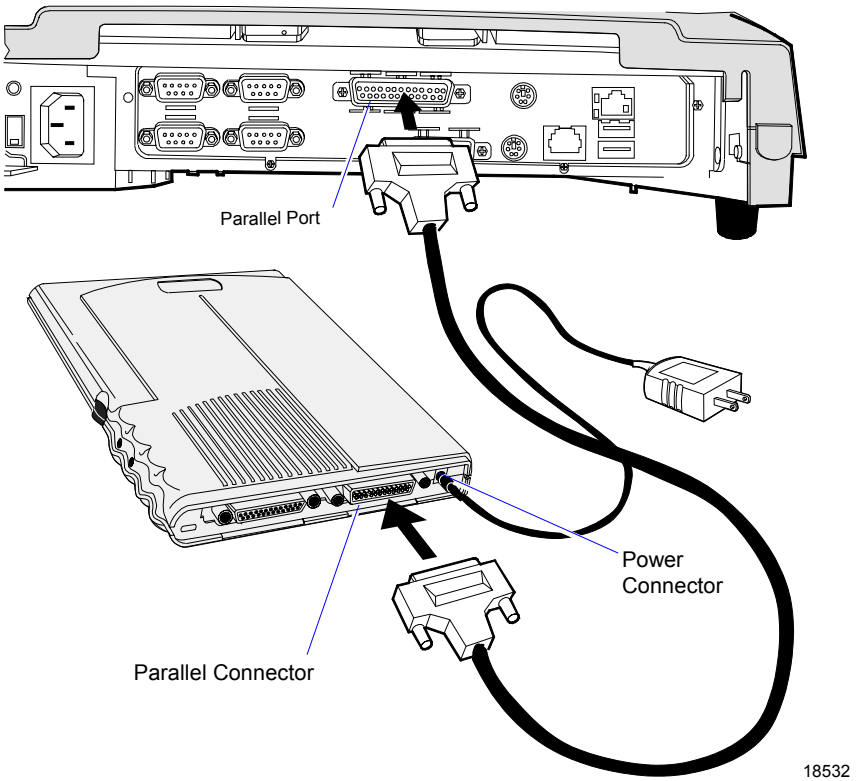
Prerequisites

The following are required on the 7460 in order to perform a BIOS update using a CD.

- Bootable CD-ROM drive (2336-K024)
- Keyboard
- Keyboard *NCR BIOS and BIOS Update Software* (LPIN: A370-0022-0100)

Updating Procedures

1. Connect the External CD-ROM Drive (**2336-K024)** to the parallel port on the terminal.



2. Connect the Power Cable to the CD-ROM power connector and an AC outlet.
3. Insert the BIOS CD in the CD-ROM drive.

   NCR BIOS and BIOS Update Software
   LPIN: A370-0022-0100

4. Apply power to the terminal.
5. Press **F2** at the screen prompt to enter Setup.

6. In the **Advanced** menu, select **Multiple ROM Menu**.
7. Set the **Parallel CD-ROM Boot** to **Enabled**.
8. Exit Setup and Save Changes.
   As the terminal reboots, you should see a message during boot indicating that the CD-ROM has been recognized:

```
Micro Solutions BACKPACK CD-ROM v0.3
. . .
Booting from BACKPACK CD
Starting MS-DOS
```

9. Follow the screen prompts on the client to update the BIOS. You can select two methods to run the update program.
   - Automatic BIOS Update – update process runs unattended

     Note: You can see a prompt for terminal model and serial number information. If the program detects invalid information in the current BIOS, or if you are replacing the processor board, there is not model/serial number information in the BIOS.

     Important: Model/Serial Number is mandatory for FitClient operation.
   - Interactive BIOS Update – permits you to input/replace the model/serial number information that is stored in the BIOS.

Note: Model/Serial number data that is currently stored in the BIOS is displayed during power up.

10. You should see a green window, indicating a successful update.
11. Press any key to reboot.
12. When the system reboots, press **F2** at the screen prompt to enter Setup.
13. In the **Exit** menu, select **Load Setup Defaults**.
14. Go to the **ADVANCED MENU** and set **RESET CONFIGURATION DATA** to [**YES**].
15. Exit Setup and Save Changes.

BIOS Crisis Recovery

The procedures below provide a way to restore the BIOS resulting from a non-recoverable condition.

Note: Use this BIOS crisis recovery procedure only for a **NON-RECOVERABLE** BIOS failure. A non-recoverable BIOS state typically results from power loss during a flash BIOS update process. This is a rare occurrence and should not be confused with other hardware errors that cause a *no video* state. **This procedure is not intended to be used for changing or upgrading an operational BIOS**.

Required Hardware

Part Number	Part Name	Use
	PC with at serial port	Download BIOS
497-0408349	Cable, 9-Pin Female to 9-Pin Female RS-232	PC to terminal connection
497-0413418	Parallel Dongle	Forces BIOS recovery

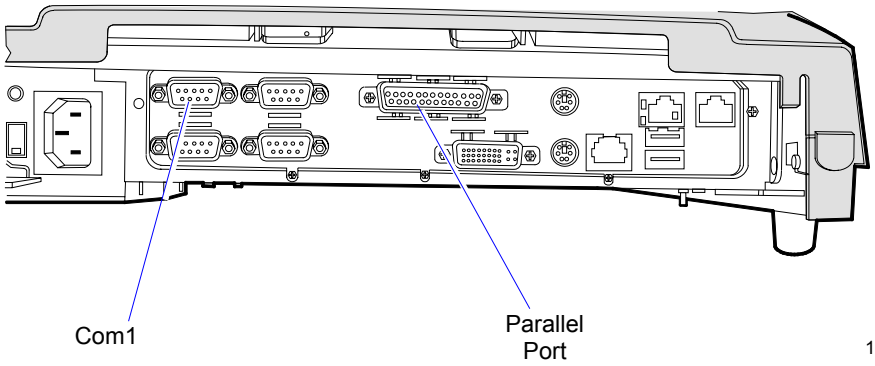
Required Software

Acquire the following software from NCR.

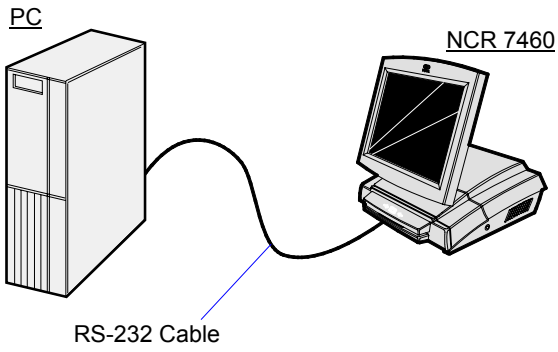
NCR 74xx BIOS and BIOS Update Software
LPIN: A370-0022-0100, Release 3.0 or later
P/N: 497-0424310

Recovery Procedures

1. Connect the Parallel Dongle to the parallel connector on the terminal.



2. Connect the two machines with the RS-232 cable. Use COM Port 1 on both machines.



3. Boot the PC in the DOS mode with CD-ROM support.

   Note: The PC must be running in the DOS mode (not in a Windows DOS box) for the software to operate correctly.

4. Insert the BIOS update CD into the PC.

   NCR BIOS and BIOS Update Software
   LPIN: A370-0022-0100

5. Apply power to the terminal.
6. On the PC, change directory to the CD-ROM drive.

   ```
   E: [Enter]
   ```

7. Enter the update command:

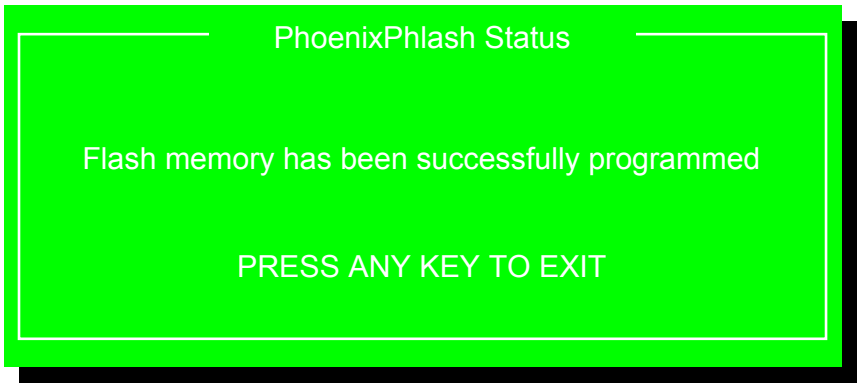
   ```
   EMBflash [Enter]
   ```

8. Select the number for the 7460 terminal from the menu list:

   ```
   1) 7454
   2) 7401
   3) 7452
   4) 7453
   5) 7455
   6) 7460
   7) 7451
   8) 7456

   6 [Enter]
   ```

   A blue screen displays as the program runs, showing the program progress, followed by a green screen, indicating a successful load.



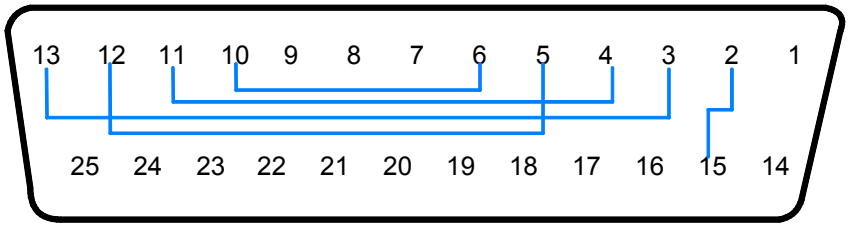
19502

The Class/Model/Serial # information is deleted using the Crisis Recovery procedure. Use the normal BIOS update procedures, as discussed earlier in this chapter, to restore the information.

Cable/Connector Pin-Out Information

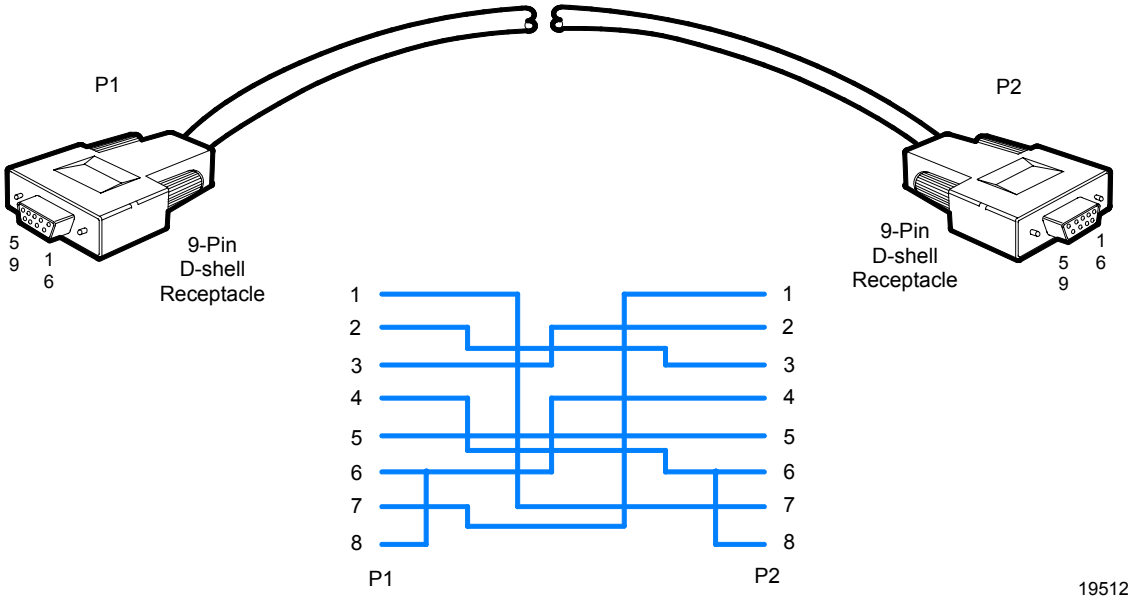
Parallel Dongle

25-Pin D-shell Receptacle
(Viewed from wiring side)



19513

RS-232 Cable



19512

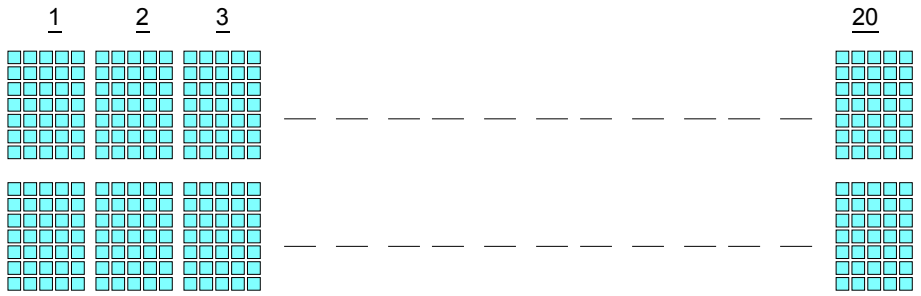
Chapter 6: NCR 7460 2x20 Customer Display

Introduction

This chapter defines the character set and the supported commands. The NCR 7460 2x20 Customer Display is an integrated line display attached to the LPT2 parallel port of the terminal motherboard.

Viewing Area

The characters are arranged in 2 rows of 20 characters. Each character is a 5x7 dot matrix.



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Diagnostics

Power-Up Diagnostics occur soon after the hardware reset circuitry is released, or when a Reset Display command is received from the host software. When the hardware is powered down, all registers and memory are lost. The display is not capable of any kind of power recovery back to a previous state. As a part of the Power-Up Diagnostics, the working registers and variables are initialized (set to zero).

Command Descriptions

Structure/Logic Description

The 7460 integrated line display consists of a character generator controller and display drivers. The CG Controller maps the character value to a bitmap stored in memory. The controller outputs the bitmap to the appropriate segment drivers for display. The display is 2 lines by 20 characters where each character is displayed lighting a 5 by 7 segment.

The display is controlled by a 7460 terminal motherboard through a parallel interface.

Integrated Display Interface

The 7460 integrated line display connects internally to the terminal motherboard. The display hardware interface is similar to a standard parallel port interface. The display is logically connected to LPT2. Standard parallel port drivers cannot be used since the standard hardware connection is controlled in a non-standard way when interfacing to the display. The display is controlled by writing either Command or Data bytes through the parallel port to the display. To display a character the character value is written as Data to the display. The Character Generator controller writes the character bitmap to the segment drivers of the display. The cursor position is updated by either incrementing or decrementing to the next display data RAM position.

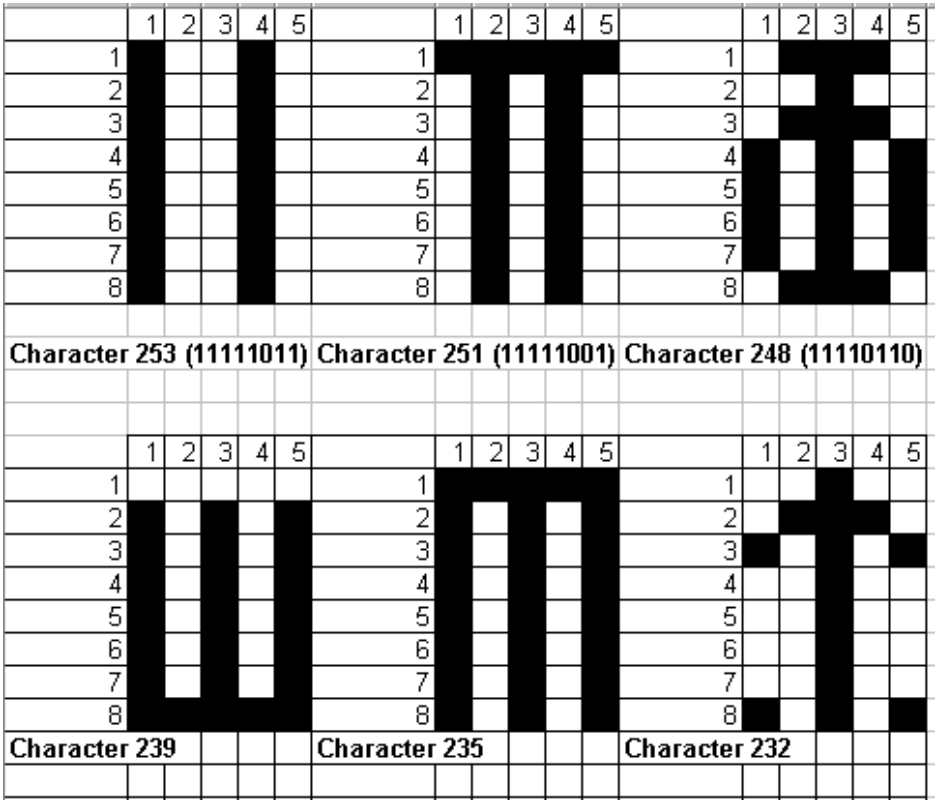
Display Data RAM address 0 is the first character of the first line. The last character address of the first line is 19. DDRAM address 64 is the first character of the second line.

The following Table describes the 7460 Integrated Display commands supported

Instructions	Instruction Guide										Description	Execution Time (fosc=270K HZ
	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0		
Clear Display	0	0	0	0	0	0	0	0	0	1	Write “20H” to DDRAM. And set DDRAM address to “00H” from AC.	1.52ms
Return Home	0	0	0	0	0	0	0	0	1	X	Set DDRAM address to “00H” from AC and return cursor to it’s original position if shifted. The contents of DDRAM are not changed.	1.52ms
Entry Mode Set	0	0	0	0	0	0	0	1	I/D	SH	Assign cursor moving direction and make shift of entry display enable	37μs
Display ON/OFF Control	0	0	0	0	0	0	1	D	C	B	Set Display (D), cursor (C), and blinking of cursor (B) on/off control bit.	37μs
Cursor or Display Shift	0	0	0	0	0	1	S/C	R/L	X	X	Set interface data length (DL:4-bit/8-bit), numbers of display line (N:1-line/2-line), display font type (F:5*8 dots/5*11dots)	37μs
Set GGRAM Address	0	0	0	1	AC5	AC4	AC3	AC2	AC1	AC0	Set GGRAM address in address counter.	37μs
Set DDRAM Address	0	0	0	AC6	AC5	AC4	AC3	AC2	AC1	AC0	Set DDRAM address in address counter.	37μs
Read Busy Flag and Address	0	1	BF	AC6	AC5	AC4	AC3	AC2	AC1	AC0	Whether during internal operation or not can be known by reading BF. The contents of address counter can also be read.	0μs
Write Data to RAM	1	0	D7	D6	D5	D4	D3	D2	D1	D0	Write Data into international RAM (DDRAM/CGRAM)	43μs
Read Data to RAM	1	1	D7	D6	D5	D4	D3	D2	D1	D0	Read Data into international RAM (DDRAM/CGRAM)	43μs

Character Map

Restriction: The last two rows of characters stored in the PC2002-L and PC2002-M ROM require 5 x 10 dots. The PC2002-L and PC2002-M only have 5 x 8 dots so the last two rows of characters beginning at 11100000 cannot be displayed correctly. These last two rows consist of symbols that are not typically used. If one of these characters is required, then the recommended method is to use CGRAM (Character Generator RAM) to generate them. CGRAM can also be used to generate up to 8 custom 5 x 8 characters.



A

Appendix A: **Cables**

Corporate ID	Part Number	Description
1416-C372-0006	497-0409394	Dual cash drawer (Y cable)
1416-C266-0040	497-0407943	9-pin female to 9-pin female RS-232
1416-C266-0152	497-0409379	7193 RS-232 50' 9-pin female to 9-pin female
1416-C337-0010	497-0407427	RS-232 interface, integrated
1416-C337-0040	497-0407429	RS-232 interface, remote
1416-C337-0152	497-0407430	RS-232 interface 50'
1416-C359-0007	497-0408349	RS-232 (27") 9-pin female to 9-pin female
1416-C528-0010	497-0415949	USB, 1 meter
1416-C528-0040	497-0415950	USB, 4 meter

B

Appendix B: **Kits**

Kit Number	Part Number	Description
2126-K161-V001	603-6211364	C-3 till
2126-K302-V001	603-6211312	C-3 till, lid with lock (2188-K202-V001)
2189-K060-V001	497-0009209	Till 2 ½
2189-K061-V001	497-0009210	Lid 2 ½
2189-K052-V002	497-0009697	SLIP TRAY (7450 G13)
2189-K053-V002	497-0009695	COIN TRAY (7450 G13)
2336-K022-V001	497-0417043	TELEQIP COIN DISPENSER BASE UNIT & RS-232
2336-K024-V001	497-0416286	CD ROM w/Parallel Cable, International Power
2756-K152-V002	497-0409426	KDS Cable
2756-K800-V001	497-0411009	KIT-Wall Mount
2756-K801-V001	497-0411008	KIT-Ceiling Mount
2757-K100-V001	497-0414898	Oasys KDS Base Kit
2757-K144-V001	497-0417729	A Bump Bar
2757-K145-V001	497-0414899	OAsys Bump Bar Mounting Bracket
2757-K200-V001	497-0414900	OAsys Video Add-On Kit
2757-K300-V001	497-0414901	10MB Ethernet Card with Software License
5945-K010-V002	497-0414162	Cable – 4M RS-232 (9-Pin D Shell)

Kit Number	Part Number	Description
5945-K012-V001	497-0414163	Cable – 8M RS-232 (9-Pin D Shell)
5945-K020-V001	497-0412046	Power Supply (120 V, 60 HZ, US/Canada/Other)
5945-K025-V001	497-0412800	SUPPLY POWER 220 - 240 V 50 HZ
5945-K150-V001	497-0416018	Electronic Payment Terminal with 2 Track MSR
5992-K150-V005	497-0423889	A Signature Capture Plus W/2 Track MSR
7156-K309-V001	497-0408655	Mounting Bracket (Power Supply)
7158-K301-V001	497-0411975	Power supply (55 W)
7158-K330-V001	497-0411974	Supply-Power (55W w/US Power Cord)
7194-K260-V001	497-0411924	Wall Mount Kit
7453-K007-V001	497-0414767	Till with lid and lock
7454-K005-V001	497-0414324	MODULAR CASH DRAWER- (Mid Range cash
7460-K011-V001	497-0423090	566MHz processor upgrade
7460-K020-V001	497-0422476	32MB memory
7460-K021-V001	497-0420350	64MB memory
7460-K022-V001	497-0420351	128MB memory
7460-K023-V001	497-0423061	256MB memory
7460-K101-V001	497-0419694	MSR
7460-K210-V001	497-0422682	56K modem/cable
7460-K451-V001	497-0419691	Integrated Customer Display
7460-K502-V002	497-0424511	Modular wall mount

Kit Number	Part Number	Description
7460-K533-V001	497-0419707	Base unit wall mount
7460-K800-V001	497-0420615	1.44 MBExternal Flex Disk Drive

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